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CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT.

AN ADDRESS on the Relation of Physiology to Other Sciences. By Prof. C. LOVATT EVANS, F.R.S. 535

LETTSOMIAN LECTURES on Rheumatic Heart Disease in Childhood. By F. JOHN POYNTON, F.R.C.P.—Lecture I. .. 537

ORIGINAL ARTICLES.

Carotid Cavernous Sinus Aneurysm. By G. P. B. HUDDY, F. R. C. S. —(*Illustrated*) 541

The After-Care of Epileptic Children. By J. TYLOR FOX, M.D. 545

CLINICAL AND LABORATORY NOTES.

A Fatal Case of Post-Vaccinal Encephalitis. By A. E. RUSSELL, M.D., F.R.C.P., and R. ODDIE, B.M.—(*Illustrated*) 547

A Case of Persistent Metatarsalgia Treated by Operative Measures. By R. BROOKE, F.R.C.S.—(*Illustrated*) 549

Diphtheria and the "Protective" Power of Serum. By JOHN GORDON, M.D., D.P.H., and JACK SCIENCE, M.D., D.P.H... 549

REVIEWS AND NOTICES OF BOOKS.

The Opium Problem. By Charles E. Terry, M.D., and Mildred Pellens.... 554

Recent Advances in Surgery. By W. Heneage Ogilvie, F.R.C.S. 554

La tuberculose pulmonaire latente. By Prof. J. Rieux 555

Rules for Recovery from Pulmonary Tuberculosis. By Lawrason Brown, M.D. 555

Chirurgie der Haut und des Unterhautzellgewebes. By Dr F. R. Ascher 555

Health and Cleanliness. By W. A. Muir, M.D., D.P.H., and George H. Green, M.A. 555

Aids to Embryology. By Richard H. Hunter, M.D., 556

Percival's Medical Ethics.. 556

The Young Man and Medicine. By Llewellys F. Barker, M.D..... 556

LEADING ARTICLES.

EPILEPSY AS A SOCIAL PROBLEM 557

THE FALLING BIRTH-RATE 557

COMPENSATION FOR SILICOSIS 558

PSYCHOLOGY IN THE MEDICAL CURRICULUM.. 559

ANNOTATIONS.

The Year's Work at the Ministry of Health 560

Chronic Pyelitis in Children 560

The Wheatley Memorial .. 560

Investigations on Puerperal Fever 561

Obvious and Obscure Infections of the Central Nervous System 561

Purer Rivers 562

The Pathogeny of Angina Pectoris 562

The Parathyroids and Bone Union 562

Standards of Atmospheric Pollution 563

Darwin's Kentish Home .. 563

Safety and Health in Industry 564

Hypertonic Salt Solution for Glaucoma..... 564

PUBLIC HEALTH SERVICES.

Liverpool Port Sanitary Authority 550

Reports of Medical Officers of Health: Edinburgh, Paisley, East Ham, Coventry, Halifax, Great Yarmouth, and Dover .. 550

Mental Hospital Reports.. 552

Infectious Disease in England and Wales 553

NEW INVENTIONS.

The La Force Guillotine. By LINDLEY SEWELL, M.B., B.S.—(*Illustrated*) 556

CLINICAL INTERPRETATION OF AIDS TO DIAGNOSIS.

III.—Reports on Swabs from the Throat and Nasal Passages. By J. E. MCCARTNEY, M.D.—(*Concluded*)..... 565

SPECIAL ARTICLES.

An Outbreak of Bacterial Food Poisoning. By JOHN MCGARRITY, M.D., D.P.H., C.J.MCSWEENEY, M.B., D.P.H., and JOHN H. SUGDEN, F.I.C..... 566

A Census of Epileptics in Surrey 568

Bucharest: The Educational Treatment of Neurasthenia 570

BRITISH MEDICAL ASSOCIATION.

Section of Diseases of Children: Chronic Splenomegaly.—Chronic Nephritis 571

Section of Radiology and Physiotherapeutics: Ultra-violet Light and the General Public..... 574

Section of Dermatology: Urticaria..... 576

OBITUARY.

Cressy Livingston Wilbur, M.D. 578

Nancy Mabel Hield, M.B. 578

John Davidson, M.B. 578

Edward John Parry..... 578

Henry William Jacob 579

CORRESPONDENCE.

Epidemic (Lethargic) Encephalitis (Dr. J. M. Stalker) 579

The Later Results of Partial Gastrectomy for Gastric and Duodenal Ulcer (Mr. Ernest Finch) 580

Blepharitis Successfully Treated by an Autogenous Antivirus (Dr. W. E. M. Armstrong) 580

Papworth Colony and Sanatorium Treatment (Dr. P. C. Varrier-Jones) 580

Insolation in Pulmonary Tubercle 580

THE SERVICES.

Royal Naval Medical Service.—Royal Army Medical Corps.—Royal Air Force.—Indian Medical Service.—Colonial Medical Services 581

MEDICAL NEWS.

University of London 581

Roy. Fac. Phys. and Surg., Glasg. 581

Factory Inspection 559

German Medical Journey to Egypt..... 559

University College Hospital 564

Golden-square Throat, Nose and Ear Hospital.. 566

Radium at the London Hospital 570

St. Thomas's Hospital 570

Donations and Bequests .. 579

Pharmaceutical Society .. 581

Royal Dental Hospital.... 581

Charing Cross Hosp. Medical School 581

Middlesex Hosp. Medical School 581

Miners' Hospital, Caerphilly 581

Fellowship of Medicine and Post-Grad. Med. Assoc. 581

A Canadian Medical Tour 581

Pigmentation of Skin and Tuberculosis 581

Bradford Mental Hospital 582

Glasgow Refraction Hospital 582

NOTES, COMMENTS, AND ABSTRACTS.

A Gramophone for the Deaf. By C. M. R. BALBI, A.M.I.E.E. —(*Illustrated*) 583

"Some Causes of Racial Decay" 583

Student's Guide: Session 1928–29: Addenda 584

A Useful Spoon—(*Illustrated*) 584

Industrial Methylated Spirit as a Beverage 584

A Pamphlet on Disease in China 584

New Preparations: Calsoma.—Trinitrine Caféinée.—Hepatex.... 584

Appointments 582

Vacancies 582

Births, Marriages, Deaths 582

Medical Diary 584

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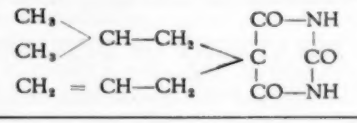

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An Address

[ABRIDGED]

ON THE

RELATION OF PHYSIOLOGY TO OTHER SCIENCES.

Delivered before the Section of Physiology of the British Association at Glasgow on Sept. 11th

BY PROF. C. LOVATT EVANS, F.R.S.,
PRESIDENT OF THE SECTION.

[AFTER reviewing the close association between physiology and clinical medicine and their mutual debt, Prof. Lovatt Evans deplored the regrettable estrangement between the two subjects which arose in the latter part of last century, when physiologists were concerned with matters such as nerve-muscle physiology, which appeared to be chiefly of academic interest. At the present day it was admitted that the knowledge then gathered has proved of great value in directing physiological inquiry along scientific lines, from which the science of medicine has profited as much as physiology itself. The interesting revival of the study of the same subjects by more accurate methods within the past few years had further enriched our insight into the fundamental phenomena of life and vindicated the opinions of our predecessors as to the value of such investigations. The development of physiological chemistry, largely due to the influence of Prof. W. D. Halliburton, and of such sciences as neurology, histology, embryology, organic chemistry, physical chemistry, experimental physiology, and pharmacology was the great dilemma of the medical curriculum. Prof. Lovatt Evans continued :—]

The solution to the difficulty lies, in my opinion, in two directions: first in the extensive modification of the present system of examinations, and secondly in the exercise of a sympathetic understanding on the part of specialist teachers of the difficulties of the student and a proper perspective of the relation of his own subject to the requirements of the curriculum as a whole.

THE UTILISATION OF PHYSIOLOGICAL METHODS IN CLINICAL MEDICINE.

It is, in my opinion, quite impossible, and perhaps undesirable, at the present time to frame instruction in physiology so as adequately to equip the ordinary medical student to proceed directly to the prosecution of research in any of its branches; this can only be achieved by a further year or two of study of the subject, such as by a science course for an honours degree. One of the objects of instruction is to enable the latest results of physiological investigation to be utilised in the clinic, and it seems to me that one of the best ways for this to be effected is for some workers specially trained in physiological methods to enter the staff of clinical units where facilities for research work are at hand. The opinion was at one time prevalent among many clinicians that if their problems required the use of methods similar to those of experimental physiology these should be farmed out to a physiologist, and although there are cases where this procedure may be followed with advantage, the rich harvest which has already been reaped by the importation of physiological knowledge and methods into, rather than the export of problems from, the clinic, is adequate justification for the former. It is in any case encouraging to note the present-day decline of the attitude that experimental investigation is work of a lower order, which can be put out like so much washing, for the employment of an inferior caste. We at the present day, however we may be labelled, are not merely willing to admit, but eager to assert, that we cannot recognise fundamentally distinct methods of physiology, of psychology, of medicine, of chemistry, or of physics; we only admit a method of experimental inquiry common to all science and slightly modified to suit particular cases.

THE APPLICATION OF MATHEMATICS TO PHYSIOLOGICAL PROBLEMS.

[In discussing the scientific aspects of physiology, the lecturer advocated mathematics as one of the collateral subjects of study which might be chosen by the young physiologist, for the following reasons :—]

The qualitative observations of one generation tend to become quantitative at a later stage of development of a science, and the degree of development of a science can indeed to some extent be judged by the extent to which it falls into a scheme of the unity of science by giving results which are capable of mathematical treatment and of expression in broad general principles. Mathematics and mathematical physics have been of considerable use to physiology in increasing the accuracy of its experimental data, and this in two ways. First, by bringing the accurate experimental and intellectual methods of physics to bear on the construction and use of the numerous physical instruments which it employs. It has been said by Prof. A. V. Hill that many of the early investigations on muscle were in reality studies of the properties of levers, and it is certain that similar remarks apply to only too many investigations in which the properties of the apparatus used have not been suitably investigated. As illustrations of the value of mathematical-physical study of apparatus one may mention the classical investigations of Frank on hæmodynamical recording apparatus, the fundamental treatment of string galvanometers and similar instruments by Einthoven, the correction of capillary electrometer records by Keith Lucas, and the vast improvements in galvanometer systems effected by Downing and Hill.

Even when the apparatus at the disposal of the physiologist is unexceptionable, however, it is often the fact that, owing to the nature of the subject, results are not susceptible of repetition with the same ease and certainty as are those of chemical or physical experiments. The variability of the results is due in such cases to what are called accidental circumstances, a term which in reality means circumstances over which we have no control, owing either to our ignorance of their nature, or else to our inability to alter them. In those cases where further study provides methods of more fully understanding and therefore more adequately controlling these circumstances, valuable results follow almost at once. For instance, certain of the obscure causes of different behaviour under particular conditions are inborn, and can be controlled by the use of inbred strains of animals such as those of the standard inbred white rats; or again, one may mention the far-reaching results of the observation by Pavlov that the utmost care must be exercised when studying the conditioned reflexes to exclude all stimuli, however trivial they may appear, except the one under consideration.

Under the most favourable conditions, however, it has up to the present been usual to find a considerable unavoidable margin of variation in the results of many physiological experiments. By regarding these provisionally as "chance" variations, considerable help may be obtained by the application of the theory of errors, based on the theory of probability. In reality this is an empirical method, of which Poincaré has said that "everybody firmly believes in it, because mathematicians imagine that it is a fact of obervation, and observers that it is a theorem of mathematics," but nevertheless, although it cannot, as seems sometimes to be assumed, be used to replace accurate observation, it does enable a result to be brought out which might otherwise be obscured by small variations beyond our control. Research by such statistical methods provides a

useful method of investigation, as, for instance, in the study of the toxic or other action of drugs, the data of the œstrus cycle, &c. An elementary deduction which can be drawn from the consideration of these facts is that, where only a few experiments of any kind are performed, important conclusions cannot be drawn unless it can be shown that the conditions are so controlled, and the accuracy of the actual observations so high that the sum of the individual "chance" variations must be small. Observation of this precaution would, in my opinion, reduce the bulk of contemporary physiological literature very materially, with a corresponding improvement in its quality.

Lastly, as a means for evolving generalisations out of experimental data, and of bringing these into relation with the generalisations of other branches of science, the use of mathematics is incontestable. One need only mention as examples the fresh outlook which has been provided for further investigation by the exact study of the data relative to the segregation and recombination of hereditary factors, the beautiful investigations of L. J. Henderson on the equilibria in the blood, the theoretical study of the phenomena of excitation, the employment of thermodynamics, and the numerous other applications of physico-chemical theory.

[Prof. Lovatt Evans then commented on the reunion between physiology and chemistry, which had given rise to the science of biochemistry, and briefly outlined the relations of physiology to zoology, botany, anatomy, and psychology. From his concluding section on the philosophical position we select a few stimulating paragraphs:—]

Philosophical Considerations.

Although the application of those sciences which are called "exact" is of immense value to physiology, we must be under no misapprehension as to their real relation, which is merely that they enable the phenomena of life to be described more accurately. They in no way furnish an explanation of those phenomena or enable us, without direct reference to physiological facts, to forecast them. The so-called exact sciences appear to be so because of the simplifications of which they are capable, by reason of which problems can readily be formulated and attacked. Disturbing conditions can provisionally be ignored or allowed for, and a first approximation reached which can be corrected later. In biology this can less readily be done. It is the failure to appreciate this elementary fact which leads some of those trained only in the methods of the exact sciences into the most palpable and unpardonable blunders when they attack biological problems. To take a simple illustration, no amount of pure physics, chemistry, and mathematics would have enabled the intricate and beautiful physico-chemical adaptations which have been shown by L. J. Henderson to happen in blood, to have been predicted, because these adaptations depend, among other things, on the presence of membranes round the red cells, fashioned by the living cells and having properties incapable of prediction. The investigation of the equilibria themselves, in their physiological significance, was a necessary preliminary to the introduction of physico-chemical theory. When these phenomena, and deductions from them, became known, it was possible for the physical chemist to step in, apply the appropriate theories, and thus enable the phenomena to be more accurately described in his own language.

But the fact remains that this description turns entirely on the postulated physico-chemical properties of the membranes as deduced from their actual behaviour under given conditions in what are in reality physiological experiments. It brings us no nearer to an explanation, perhaps, but it certainly does enable us to link up some of the phenomena of life with phenomena in the non-living, and so to scribe them in terms which we think we understand tter, because for some reason we regard physics d chemistry as more fundamental sciences than biology. Whether they are really more exact, however, is a point which might be debated.

The process of application of the exact sciences to physiology consists in reality of studying the phenomena themselves and then adopting the most plausible explanation capable of formulation in terms of the exact science. There is no other way. But let us be under no illusion about finding final explanations of what life is by this or any other methods.

Physiologists, in attempting to know what life is, have in my opinion attempted too much, and I think that a new standpoint is essential. One of the greatest of contemporary thinkers, L. J. Henderson, has recently submitted an argument with which I venture humbly to agree. The idea of adaptation, urged by Claude Bernard, should be adopted by physiology as its basal principle, as the chemist accepts the conservation of matter or the physicist the conservation of energy. We need not seek to know why it is so: that is the province of the philosopher; all our experience tells us that it is so. It is not a definition of what life is, but a brief statement of its way, which is valuable, stimulating, and true. But we must treat the organism and its environment as one if we are to gain a proper insight into the adaptations manifested by the former. Life is conserved by adaptation, and I venture to think that this conception will be useful alike to general biology, to physiology, and perhaps most of all to pathology. For there is no fact in biology, pathology, or therapeutics which may not profitably be viewed from this fundamental physiological standpoint.

The Trend of Modern Physiology.

In many ways a great future lies before physiology. Utilising the other sciences as its tools and itself reacting powerfully on them, we can confidently predict progress to undreamt-of heights, an enormous development of experimental pathology and medicine, and far-reaching effects on economic and sociological conditions. Yet, implicit in these very potentialities, there is another and a gloomier side to the picture. The rapidly accumulating wealth of detailed knowledge and of special technique demands an increased specialisation; unless there is a periodic intellectual stocktaking there must inevitably be a loss of perspective and of grasp of great general principles. But how can this stocktaking be done? Can team work ever reach that harmony of action which distinguishes the individual? Any scientific subject is capable of indefinite expansion, and with the biological sciences it is hard to foresee what the ultimate end of *mere* expansion can be. How will scientific literature develop? Will there have to be abstracts of abstract journals and reviews of reviews? Will the subdivision of the subject necessitate in the long run the creation of lectureships or professorships to deal, for example, with the special physical chemistry of heterogeneous equilibria in biological systems, with intermediary metabolism, with the problems of hæmodynamics, or growth, or reproduction? If so, how will the results of their special investigations be brought to common ground if no great unifying principles come to light? Can we expect that such unifying principles will appear; if they do not, will the progress of science be brought to an end by the accumulation of its own products?

The establishment of special research professorships, however profitable in isolated cases, cannot in my opinion make good this growing specialisation, because it will tend to divorce research and teaching and place the teaching professor on a level of real or apparent inferiority. The idolisation of research for the sake of the advancement it brings is another of the dangers which threaten us. If there is one thing worse than "a mediocrity who does no research" it is "a mediocrity who does." There are at the present time a large number of junior research posts available, but not enough well-trained people adequately to fill them. This is all to the good provided that those who on trial show no aptitude for the work can be

ruthlessly eliminated. As they often cannot, there are in consequence a number of young people who drift from one research scholarship to another, perhaps not aimlessly, but with no better objective than the manufacture of papers designed to justify their employment. The hapless editors of each of the swelling tide of journals are coaxed, hoodwinked and, if necessary, bullied, to ensure that these papers see the light of day. In the fullness of time the list of short-time research posts is exhausted, and the young investigator must now either turn to some entirely different occupation or else, as one of my friends expressed it, "subside into a professorial chair" for which, incidentally, he is probably entirely unfitted. The pursuit of science is nowadays, perhaps unfortunately, a career, and one in which moreover it pays to advertise. Science, we are often told, is the cream of civilisation. If we believe this let us use all our endeavours to ensure that it be not a whipped cream, specious, puffed up with wind, and presenting a fictitious appearance of solidity.

Lettsomian Lectures

ON

RHEUMATIC HEART DISEASE IN CHILDHOOD.

Delivered before the Medical Society of London

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LECTURE I.

Delivered on Feb. 20th, 1928.

IN these three lectures I shall pursue three particular themes. The first is the correlation of the pathological lesions of the heart with other rheumatic lesions; the second the clinical manifestations of rheumatic heart disease; the third the treatment of the heart disease. This lecture deals with the first theme, and the pathological lesions will be considered under two headings: (1) Those in the connective tissue skeleton. (2) Those in the "noble" tissues—for example, the heart muscle and nervous tissues.

There is general agreement that acute rheumatism is the result of an infection and that this infection is dependent upon various predisposing causes. These, however, are not generally agreed upon and are in process of careful investigation. In accordance with my own conviction, I shall assume the infection to be a diplococcus of the streptococcal group, though I admit that medical opinion generally inclines to the view that the cause is not yet known, and I recognise that the next great scientific move must be further extensive research in this direction.

1. THE LESIONS OF THE CONNECTIVE TISSUE SKELETON.

The earliest lesions in the myocardium, as shown in histological sections demonstrated before the Royal Medico-chirurgical Society in 1899, are scattered foci of cellular infiltration and the appearance of multi-nucleated cells between the muscular fibres. These are, in my opinion, the antecedents of the Aschoff nodule.

Aschoff's nodule has been the basis of extensive and world-wide research, in this country particularly by Dr. Carey Coombs, who says: "The submiliary nodules in myocardial rheumatism consist of rounded or fusiform areas formed by large spindle-shaped cells lying in the intermuscular trabeculæ of connective tissue." The average length he would estimate as somewhat less than 400 ft. "The special cells," he says, "are much larger than the fibroblasts of ordinary inflammatory reactions, to which in other respects they closely approximate. They are multi-nucleated, the chromatin substance of the nuclei in most cases appearing as a sharply defined margin with a small central mass or masses; the rest of the nucleus takes no stain and thus gives the cell a vacuolated appearance. They are surrounded by plasma cells and leucocytes, chiefly of the mono-nuclear variety. The nodules frequently arise in connexion with an arteriole, either around it or even in the wall itself, and their eventual fate appears to be cloudy swelling or cicatrisation." My view is that these nodules are the first signs of healing in a rheumatic lesion, and that they are probably evidence of a streptococcal infection, but that their absence from the lesions of a fatal acute rheumatism is no proof that the condition is not rheumatic.

When there is a severe infection the changes in the connective tissues, be it subcutaneous nodule, pericardium, cardiac valve, or synovial membrane, are all built on the same plan. The subcutaneous nodule is the best illustration, because it affords a complete example on a small scale. In the centre of the infected area there is necrosis, in the adjoining zone leucocytic infiltration and cell proliferation, in the outer zone vascular dilatation and swollen and often gelatinous-looking connective tissue fibres. Identical nodules were demonstrated by Sir Thomas Barlow in the pericardium and endocardium more than 40 years ago, and in the original paper on the rheumatic nodule, published in 1881, Warner and Barlow said: "Such nodules belong strictly to the fibrous tissues, and in nature are probably homologous with the inflammatory exudation which forms the basis of a vegetation on a cardiac valve." The results of the healing of these lesions are also clear; the necrotic tissue must be replaced by scar tissue, which in the nodules is negligible, but which in the pericardium may lead to adhesion or to great thickening of the layers, and in the valves to deformity.

The Necrotic Areas in Rheumatic Lesions.

The point on which to focus attention now and in the future must be the degree of perfection of the healing of the necrotic areas in the connective tissue skeleton. This is very difficult while the nature of the infective agent remains doubtful, and will continue difficult even should it prove to be streptococcal.

All my investigations with Dr. A. Paine, into the morbid anatomy, suggested that the infective agent would most probably be found where the zone of cell exudation merges into the dead tissue, for just at this point the infection has killed the resistance of the cells, but has not become, as it were, buried in the necrosis that it has produced. We need to know the frequency, duration, and extent of these unhealed lesions, especially in the connective tissue of the heart. We want, still more, to know whether they contain the infective agent in some form or another. I purposely say "in some form or another," because if the infection is unknown it may, when discovered, be found to assume some resting phase in such areas. Dr. Paine and I showed, at a pathological meeting of this society in 1911, that the diplo-streptococcus could be converted, by alterations in media in vitro, into very long chains or into a micrococcus indistinguishable in appearance from a staphylococcus. If a section of a gross streptococcal endocarditis is made in a region where there has been an effort at healing, we find the micrococci toward the healing area staining red, not blue, with methylene-blue, and later still becoming unstained refractile specks in the light blue fluffy necrotic tissue. The question is: are they then dead? If we watch a culture growing on such a medium as milk under the highest magnification we see, first, minute refractile dots, then blue-staining micrococci, then the fully developed diplo-streptococcus. If the infection is streptococcal these areas of necrosis are weak links in our knowledge of the morbid anatomy. Though I may seem to be dwelling upon recondite details, I am really only echoing the difficulties of the clinician who asks: When is an attack of rheumatism cured? How can

I ascertain this? What is the importance of unexplained fever in acute rheumatism? When we look at these questions from the aspect of morbid anatomy we can well understand how much further investigation is required to answer them, and how much our difficulties are increased by the great rarity of fatal rheumatic heart disease in the very earliest phases of the illness in man.

Some light is thrown, however, upon the destruction of the rheumatic infection by experiment and by some observations made by Dr. Paine and myself in 1911 upon experimental appendicitis in young rabbits; and in 1912 upon acute appendicitis in man associated with follicular tonsillitis. The same streptococcus was isolated from the tonsils and the appendix, and produced a series of cases of multiple arthritis and appendicitis in rabbits. The advantages of these investigations were that the animals could be killed in the early stage of illness and that the human appendix was in an early phase of acute infection. We hardly ever obtain such a lesion as rheumatic endocarditis at this early stage.

Possibly the rapid recovery of arthritic, compared with cardiac lesions, is due to the extreme vascularity of the synovial membranes and the profuse leucocytic reaction in them, combined with our ability to keep joints at rest. The cardiac valves are under great disadvantage, but a mitral valve which has been slightly damaged by a row of marginal vegetations will, in course of time, heal with slight thickening only; this in turn may smooth down and become of no functional importance, as clinical experience has amply demonstrated.

Every investigator of acute rheumatism must be struck by its general resemblance to tuberculosis, and I would compare the acute phases of the two infections.

Chronic Rheumatic Infection: Mitral Stenosis.

I now come to another type of lesion in which the invasion of the connective tissue skeleton is subacute and distinguished by a slow process of fibrosis. This type we all know too well as the cause of what is probably the most serious form of organic heart disease: mitral stenosis. Our efforts to ameliorate rheumatic heart disease must depend to a considerable extent upon a better understanding of the life history of this type of rheumatic infection.

At the onset we are met by two puzzling problems. Why is this type so much more frequent in the female? and does the process of fibrosis depend entirely upon the infective agent or is there also some tendency in the individual tissues to react in this fashion? This second question is of great clinical importance and may be put in another form: does a severe mitral stenosis result from a single prolonged attack of rheumatism, or does it more frequently result from repeated and often unrecognised reinfection or recrudescence? The brutal attacks and the gross injuries of infective processes in human beings we comprehend, but it is the quiet, stealthy movements of infection that are so baffling and so likely to lead to wild theories and sometimes equally wild methods of treatment. The chorda tendineæ of the mitral valve of a rabbit is but a mere thread of connective tissue, yet by intravenous inoculation we can demonstrate that the infection fastens upon one segment of this slender cord.

In one little girl who died of rheumatic myocarditis in a first attack, I traced at the bedside, in the short period of five months, the development of the physical signs of mitral stenosis in a valve at first apparently healthy. The cusps after death were greatly thickened throughout, but showed no projecting marginal vegetations. The sections showed a condition identical with that found in a rheumatic nodule.

Dr. Carey Coombs, in his valuable monograph upon rheumatic heart disease, gives excellent illustrations of similar changes in the musculi papillares. Such extreme damage to the cusps of a valve as occurred in the small child might well, if she had survived and had no further attack, have caused sufficient contraction to produce a grave stenosis. There are, however, many cases in which one suspects obstinate recurrent infection as a more probable cause of severe stenosis. This is shown, for example, by repeated attacks of chorea as evidence of recurrent activity of the rheumatism. Let us hope that recurrent rheumatism is more usual, for upon this hypothesis there is more encouragement to efforts at prevention. This chronic process of fibrosis is sometimes met with in the aortic and tricuspid valves, and also in the myocardium.

Many physicians have noticed the occurrence of a chronic arthritis of the hands in association with advanced mitral stenosis, and there is also a considerable number of examples of fibrosis of the kidneys with the same association. It is difficult to speak with any certainty of a chronic arthritis of rheumatic origin in the child, although I suspect that it may occur in exceptional cases. Rheumatic nodules may undoubtedly remain for long periods of time, reach a considerable size and show much fibrous change under the microscope, as also may a chronic fibrositis and tenosynovitis in the palms of the hands. Some cases of chronic arthritis I have seen have been complicated with sclerodermia and with endocarditis of the sclerotic type, but these are very rare and their rheumatic origin may be questioned.

My experimental observations, made with Dr. Paine on endocarditis, suggested that infection of the valves takes place from the coronary circulation and not from the blood in the heart chambers, and that morbid changes begin within the structure of the valve as they do within the wall of the vermiform appendix.

The Pericardium.

The morbid changes in the pericardium also begin within the pericardial tissues beneath the endothelium. When the inflammation is severe, an infinite number of necrotic areas appear and destroy the endothelium, thus producing the shaggy appearance. In the subendothelial pericardial tissue there are vast numbers of blood capillaries, and their distension and rupture explain the fact that acute rheumatism is the most frequent cause of hæmorrhagic pericarditis. The numerous foci of inflammation account both for pericardial adhesion and for the fact that when a pericardium has been thought to be generally adherent a renewed outburst of infection may lead to a localised but unexpected reappearance of friction in some area which has not become glued down by the earlier attack. The chronic fibrotic type of pericarditis, in which nodules of considerable size may be found and in which great thickening may occur, is of clinical interest, because it may very closely simulate a pericardial effusion, and thus prove a pitfall to the clinician or radiologist who is not well acquainted with the possibilities of rheumatic infection.

It is generally accepted that an extensive pericardial effusion in childhood—i.e., one sufficient in itself to strangle the cardiac movements—is altogether exceptional. However extreme the area of cardiac dullness, the physician's first thought must always be: is this the result of cardiac dilatation, or of dilatation with a thickened and adherent pericardium?

Prolonged periods of pericardial friction and its reappearance when, after a latent phase, the infection again becomes active, make it easier to prove that an obstinate but active infection is the cause of a thickened and fibrotic pericardium, than that it is the cause of a chronic valve lesion. In some exceptional cases the process may affect not only the pericardium but both pleuræ, and the result is the remarkable sequence of events met with in multiple serositis. These are: strangling of the heart, much enlargement of the liver and spleen, and recurrent and severe ascites. In childhood, however, this is more frequently due to a chronic tuberculous infection of the serous membranes. In other cases chronic infection of the pericardium, pleuræ and mediastinal tissues causes an indurative mediastino-pericarditis which eventually, by gross mechanical shackling of the heart, produces fatal consequences without the

repeated outbursts of active infection that occur in multiple serositis. The healing of a severe pericarditis is and must be slow, and the presence of partially healed and dangerous necrotic areas in the pericardium is of interest.

A girl admitted to hospital in the middle of January, with severe pericarditis, eventually recovered from all active signs of the disease, but the heart was so greatly injured that she died in the middle of April. The post-mortem examination showed that, although the pericardium was becoming generally adherent, the adhesions at the back were still soft and only partially formed. This gives definite information upon the slowness of the process of healing of a severe pericarditis. Even if the adhesions had been sound and firm, the recovery of the cardiac muscle would still have to be reckoned with. This proved to very imperfect, and extensive fatty change was present throughout the heart wall. The bearing of these observations upon treatment is obvious.

The danger of active foci is well illustrated by another child who was in hospital eight and a half months with repeated outbreaks of recurrent pericarditis, persistent fever and recurring subcutaneous nodules. After death great thickening of the pericardium was found, but there was no fluid in the sac and only a few recent adhesions were present. Here there was continual activity and a condition which I should term a malignant rheumatic pericarditis.

Interstitial Lesions in the Myocardium.

The interstitial tissues of the myocardium are damaged in rheumatism much as the endocardium and pericardium are. In my experience it is unusual to see the extensive scar formation such as occurs, for example, in syphilis of the heart, but in inveterate cases extending beyond the age of childhood this may occur, and the resulting perivascular fibrosis is exactly comparable with that seen in chronic appendicitis and in rheumatic arthritis, which affects the vessels of the synovial membranes and doubtless interferes with their normal function.

Clinical investigation has proved that from time to time the miliary lesions in the connective tissue closely connected with minute arterioles may damage in some degree the conducting fibres of the cardiac mechanism Temporary heart-block is an example.

Malignant Endocarditis.

There is another problem in the morbid anatomy of acute rheumatism which in some respects is the most important of all. Can the infection develop a local virulence and then obtain almost complete mastery of the situation? or, when a local predominating bacterial virulence occurs, is it because the rheumatic disease has prepared the way for other infections? No one can possibly answer this question until the cause of acute rheumatism is decided, and for this reason alone I look upon the problem as one not for controversy but for research. It is essential that the facts should be thoroughly understood. For example it is common knowledge that in "subacute bacterial endocarditis" a patient often complains of rheumatic pains. This may or may not be evidence of the rheumatic nature of the disease. It is well known that rheumatism often attacks more than one valve, and it is interesting to find the overwhelming frequency of the combination of the mitral and aortic lesions, that is, of damage to two valves in close proximity. This combination is very frequent in childhood and of the greatest clinical importance. If these cases are traced into adolescence, and some of them suffer from repeated attacks of rheumatism, they may die of malignant endocarditis. It is this combined lesion which in my experience most often develops malignant endocarditis. Among cases with a rheumatic history are found not only malignant endocarditis and fugitive pains, but also multiple arthritis, nodules, Osler's spots, and pericarditis. Further, as post-mortem and clinical evidence show, the arthritis and the pericarditis may subside but the endocarditis come gradually to the fore and prove to be of the malignant type. Streptococci may be recovered from the blood in severe rheumatism and yet the patient may recover. Sir William Willcox recorded the case of a man from whom Dr. Paine had isolated the micrococcus from the blood during an attack of pericarditis, and who was at work seven years later; I have had other examples in childhood. It is well known, on the other hand, that in many cases of malignant endocarditis the streptococcus cannot be isolated from the blood for long periods and sometimes not at all. In 1912 I showed at this society the heart of a boy, aged 7, who died in his first attack of acute carditis. On the mitral valve was a large fungating vegetation, and there had been arthritis and severe pericarditis with an unusually copious hæmorrhagic effusion. Large subcutaneous nodules may also occur in cases of malignant endocarditis associated with rheumatism; in one of these we demonstrated the micrococci in a minute blood capillary.

I lay stress upon these points because it is of the utmost importance for the future of the treatment of heart disease, and for the elucidation of the cause of acute rheumatism, that a decision should be reached as to whether or not there is a malignant type of rheumatic endocarditis. If there is, then it will mean that the cause of the disease "acute rheumatism" is ascertained; if there is not, we are left with two difficulties for solution. The first is the discovery of the real cause, and the second is the reason for the frequent association of a streptococcus with the lesions of acute rheumatism, for the appearance of this micrococcus has perplexed investigators all over the world. In the cases of the type of which I am speaking the only difference in the morbid anatomy of the valve from that of a simple rheumatic endocarditis lies in the necrotic tissue of the vegetation. In the first it is crowded with the micrococci, but in the simple form they are destroyed or apparently destroyed, and must be searched for in the zone abutting on the necrotic area, where they will only be found in scanty numbers. This difference seems to me the essential factor in the problem, and all the secondary consequences of an active local focus impinging on the blood stream merely confuse the issue by producing a general septicæmia and diverse symptoms from infarctions, which naturally lead us to believe that we are dealing with a disease of different nature from acute rheumatism. The alternative explanation, that this form of endocarditis is the result of a secondary infection attacking damaged valves, is undoubtedly much more easily comprehended, because it is most difficult to find the micrococci post mortem in the valve of simple endocarditis, but in the malignant endocarditis they abound.

Is rheumatic endocarditis frequent in the young? and are the possibilities of secondary infections from tonsillitis, from septic sores, from otitis media, from empyemata and broncho-pneumonia, frequent? As we are compelled to answer both questions in the affirmative, malignant endocarditis should be frequent in the rheumatic child, and yet, as a fact, it is exceptional. Fatal rheumatism and tuberculosis in the young have almost invariably a widespread distribution. It is in later life that, in both diseases, a local lesion comes to the front and overpowers all resistance. We have to explain the exceptional cases of malignant endocarditis in the rheumatic child by supposing that other lesions, such as the pericarditis, the arthritis and the nodules, may behave in the usual fashion of acute rheumatism and subside, and yet the endocarditis progress. Have we, then, two acute processes occurring simultaneously, one undoubtedly streptococcal and the other the mysterious rheumatic infection? If the damaged valve—the result of past attacks of rheumatism—only serves to give a foothold to the secondary infection, why should the rheumatic infection become active in other organs simultaneously? When we consider malignant endocarditis and rheumatism, it becomes apparent how vital the bearing of streptococcal infection is on the problem of causation. Twenty-five years ago Dr. Paine and I remarked to one another that the great battle as to causation would be fought not over acute rheumatism but over this form of endocarditis, and I still hold that view.

Recent Investigations.

A recent paper by K. E. B. Birkhaugh [1] is one that must arouse attention. Here, again, a streptococcus is the centre of interest. When we brought forward our first paper in September, 1900, we were faced by the difficulty that if we called the micrococcus a streptococcus the reception would be: "These gentlemen have rediscovered the streptococcus pyogenes"! There was then no general realisation of the complexity of the streptococcal group. That difficulty has long passed away, to be supplanted by the converse and formidable problem of how to distinguish the various groups of streptococci. The researches of Swift and Kinsella, Andrewes and Derick, could find no specific type of streptococcus in acute rheumatism. Then came the work on scarlet fever, and the development of the Dick test. Here, again, we find the streptococcal group in evidence, and we must remember the association of scarlet fever and rheumatism. Birkhaugh isolated, from an acutely fatal case of juvenile rheumatism, what he terms "a new species of non-methæmoglobin forming, inulin-fermenting, bile-insoluble and toxigenic Gram-positive streptococcus." This he also isolated from the tonsillar crypts, blood and cardiac vegetations, fæces and urine. He groups it apart from the *Streptococcus hæmolyticus* and *Streptococcus viridans*. Among 68 strains of this streptococcus 72 per cent. were found to produce a soluble toxic filtrate with which 76 per cent. of rheumatic children gave positive skin reactions. Intramuscular injections of increasing doses in laboratory animals and in human beings susceptible to the toxin produced a neutralising antitoxin. The micro-organism injected into rabbits produced the various manifestations of rheumatism. Finally, the author of the paper, who had previously given a strong positive intradermal reaction, produced in himself, by intra-articular and intramuscular injections of large doses of the soluble toxic filtrate, an acute polyarthritis of the rheumatic type. This is a research which, if it meets with confirmation from other investigators, will mark a definite step forward in our knowledge of the causation of acute rheumatism, but it clearly needs very thorough confirmation, and at the moment I use it chiefly as an illustration of the modern lines of thought on the problem of the streptococci.

In association with rheumatic carditis we sometimes meet with unusual rheumatic manifestations such as phlebitis. I believe this to be of the same type as the other lesions: an interstitial inflammation in the wall of the affected veins. Similarly the peritonitis is strictly akin to the pericarditis, pleurisy, mediastinitis, arthritis and tenosynovitis. Again the tonsillitis, when severe and still more when recurrent, will lead to fibrosis and, as a result, the penning up of foci of infection deep from the surface. Surgery has now demonstrated this incontrovertibly. The involvement of the tonsillar cervical glands is easily understood, and the study of the morbid anatomy of the disease leads us to believe that in these glands there will be great destruction of the infective agent if it is streptococcal. Clinical observation bears out the morbid anatomy, for there is a large group of mild rheumatic infections which show themselves in sore-throat, enlargement of the cervical glands, and a passing cardiac dilatation from the escape of the infection or its toxin into the system.

2. LESIONS OF "NOBLE TISSUES."

In the second group of lesions caused by the rheumatic infection we are once again confronted by a large unexplored field, and realise how essential it is to decide the exciting cause of the disease. We know nothing fundamental about the nature of the poisons in acute rheumatism, or to what extent they act by direct injury to the tissues or by the more subtle process of building themselves into them and thus producing some more or less permanent alteration in the normal metabolism. The bacteriologist and biochemist will no doubt slowly solve some of these essential problems which the clinician and morbid anatomist can but dimly recognise. We know with certainty that direct damage is done to the muscle of the heart and to a lesser degree to the nervous system, as shown by the meningo-encephalitis of chorea. We suspect from the highly nervous temperament and the occasional thyroid enlargement of many rheumatic children that an attack of acute rheumatism may possibly alter the metabolism or, at any rate, the normal functioning of the tissues long after any active sign of infection has disappeared.

I am a firm believer in the hereditary factor in acute rheumatism. Upon this the private case-books of the late Dr. W. B. Cheadle, dealing with educated patients, gave clear evidence: in 30 consecutive cases 23 gave a family history, and in 103 out of 180 there was also family history in parents or near relatives. Again, when acute rheumatism attacks children under 5, there may be striking examples of this hereditary factor.

A female, aged 2, had severe rheumatic carditis with arthritis. Her father had had rheumatic fever, and her maternal uncle died of the disease. A female, aged 4½, had acute rheumatic arthritis, and her mother had three attacks of acute rheumatism and suffered from heart disease. A female, aged 3½, died from acute carditis. Her father had suffered from acute rheumatism, and her paternal uncle had died of the disease. A male, aged 4½, had an attack of acute rheumatism with arthritis and carditis. His father had also had an attack of acute rheumatism.

It is my belief that some peculiarity of constitution is transmitted to such children, rendering them less resistant to the infection, but it is impossible to speak with any certainty in our ignorance of the rheumatic toxins.

We know that the cardiac muscle may be terribly injured. Fatty changes are the most easily demonstrated, and on two occasions I have seen small cardiac aneurysms of the right ventricle, the blood in the cavity of the chamber being separated from the pericardial cavity only by the visceral pericardium. When there are also extensive and scattered lesions in the interstitial tissue, it can be readily understood how grave the results must be. It is most exceptional for this condition of the heart to be unattended by some degree of pericarditis, but cases have been recorded and death has resulted from acute asystole due to a primary rheumatic myocarditis.

Injury to the Nervous System.

I spoke of chorea as a rheumatic meningo-encephalitis—a view held by Dr. Paine and myself as the result of our investigations, further upheld by Dr. Gordon Holmes and myself, and again supported by the distinguished pathologist to the National Hospital for Nervous Diseases, Dr. J. G. Greenfield, in a detailed investigation of a fatal case of chorea, published in THE LANCET (1922, ii., 603). It is supported also by various Continental investigators. From the standpoint of morbid anatomy all are agreed that the lesions in the nervous tissues are comparatively slight. Recent years have, however, revealed to us much that was unknown before, for the appearance of encephalitis lethargica has shown us conclusively what devastation apparently insignificant lesions may produce in such a highly evolved organ as the brain. Not only may the physical disabilities be great, but the character of the patient may be entirely altered. We know that chorea is an outstanding result of rheumatism and attracts the attention of the most superficial observer. We also know that the rheumatic child is exceedingly nervous, and that in chorea there may be delusions and even a condition bordering on dementia. Rheumatic children may also, between attacks of acute rheumatism, suffer from prostrating headaches, from paroxysmal attacks of cyanosis of a limb, or spasms of the muscles, or intense neuralgic pains. Still more remarkable are attacks of anginal pain, in which there is undoubtedly a so-called functional element, but which nevertheless may prove fatal if there is organic disease of the valves. We cannot

[1] Journal of Infectious Diseases, May, 1927.

deal satisfactorily with heart disease in the young if we do not realise how important a part the nervous system takes in its management and treatment.

Chorea is the most frequent solitary manifestation of rheumatism, and yet it may be a precursor of and a manifestation in the most severe attacks. I believe that injury to the nervous system not possible to appraise in the terms of morbid anatomy may lower the resistance of children to the rheumatic infection, and that continual strain from brain work, not perhaps of any high degree of excellence, tells upon this kind of child much more than we recognise. On account of their keenness and lack of reserve nerve power, these children require more rest than others, and if they do not get it they are more likely to be attacked by the disease. I look upon lowered nerve tone as an important predisposing cause. Certainly no children with a severe attack of heart disease require more care and tact in nursing and handling. In many cases, also, excitability of the heart's action, which adds much to the difficulty of obtaining complete recovery, is by no means dependent upon an active myocarditis, but upon some damage in the nervous system.

Injury to the Blood.

Sometimes the streptococcus can be isolated from the blood stream and at other times it may be demonstrated in the diplococcal form in the polymorphonuclear leucocytes. It would surprise me greatly if either of these events were frequent, because the lesions produced are chiefly focal and the tissue-resistance to the infection is great, so that the micrococci are destroyed more or less completely in the lesions. The red cells suffer severely and the hæmoglobin in particular is damaged by the rheumatic poisons. The anæmia may be very slow in abating, and I suspect that prolonged anæmia, associated in adolescence with rheumatic endocarditis, favours the development of malignant endocarditis. Swift and J. R. Miller, junior, have recently investigated the white cells, and find that the leucocytosis may reach to 10,000 per c.mm. Their researches have been very careful and detailed, and they hold that anti-rheumatic drugs will control this leucocytosis, which will again assert itself should they be discontinued while the infection is active. I am anxious to corroborate this observation, for clearly it may help us in estimating the progress of a case.

There may be other and more subtle changes in the blood plasma as a result of the rheumatic infection, but of such I have no knowledge.

SUMMARY.

I have endeavoured in this lecture to bring into prominence the two chief ways in which acute rheumatism damages the heart and other organs, basing my argument upon experimental and pathological investigations, with a streptococcus as the assumed cause. There are the local interstitial lesions which tend to necrosis and fibrosis, and there are the toxic effects of the circulating poisons. The interstitial lesions seem to me to produce results which clinical observation at the bedside corroborates: valvular lesions, pericarditis and local myocardial disturbances. The toxic effects of the infection, though well recognised at the bedside in the profound anæmia and damage to the cardiac muscle and nervous system, cannot yet be correlated with any definite poison, though I believe it would be difficult to prove that a streptococcal infection could not produce such results. I can imagine no more difficult problem than the isolation of these poisons, some of which may possibly only be produced in the living organism and not in vitro. If the exciting cause of the disease is still unknown, it is at least apparent that we must expect it when discovered to give us an explanation for the many ascertained facts of the morbid anatomy, and all who are interested in the great problem of rheumatism must look forward with eagerness to the solution. Whatever it may be, I should like to take this opportunity to say of my friend and co-worker, Alexander Paine, what that great genius from my native county of Somerset, Roger Bacon, said of Peter of Maricourt: "Of discourses and battles of words he took no heed, he followed the works of wisdom and in them found rest. Through experiment he gained knowledge of natural things."

CAROTID CAVERNOUS SINUS ANEURYSM.

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IN this article I refer particularly to carotid cavernous sinus aneurysm, but many of the references and figures relate to articles on "pulsating exophthalmos," a condition in which the exact pathological lesion is often unknown though the majority of cases are due to carotid cavernous sinus aneurysm. This condition, although uncommon, is not one of the rarities of medicine. There are still many points which require elucidating, and as it rarely falls to the lot of any one person to see more than one or two cases their record is valuable.

Classification and Ætiology.

The cases are classified into traumatic and spontaneous.

In the traumatic group the injury may be direct, such as a gunshot wound, but it is more usually caused by indirect violence, often a fracture of the skull.

In spontaneous cases the main factor is disease of the artery resulting either in its rupture or in the formation of a true aneurysm, which ruptures secondarily. A large proportion of these cases occur in females, and Hart,[1] writing in 1862, pointed out the ætiological significance of weakness after fever or childbirth. De Schweinitz and Holloway [2] found that the onset occurred during pregnancy in 14 out of 49 women suffering from pulsating exophthalmos. Strain may also excite the condition, although sometimes the onset occurs while the patient is at rest. Locke, in an important article [3] on pulsating exophthalmos, gave figures from which it appears that approximately three-quarters of the cases are traumatic, that three-quarters of the traumatic cases occur in men, and that three-quarters of the spontaneous cases occur in women.

The average age for the traumatic group is towards the end of the third decade, and for the spontaneous towards the end of the fifth decade.

The trauma may be very slight. Picqué [4] recorded a case in which the patient received a blow on the right eye which caused neither loss of consciousness nor any serious contusion to the eye. Cases of this kind probably belong ætiologically to the spontaneous group, the trauma acting as the final factor.

Anatomy.

The cavernous sinus is situated on the side of the body of the sphenoid and extends from the sphenoidal fissure to the apex of the petrous portion of the temporal bone. The superior ophthalmic vein drains into the anterior end of the sinus through the sphenoidal fissure, communication being thus established between the angular vein and the sinus. The inferior ophthalmic vein may enter the sinus or may join the superior ophthalmic vein. Posteriorly the cavernous sinus drains into the superior and inferior petrosal sinuses, which are closed in by rigid structures—bone and dura mater—and thus the effects of the arterio-venous communication are chiefly thrown on the veins draining into the sinus. Some of the cerebral veins drain into the sinus, which also communicates with the pterygoid venous plexus. Running through the sinus is the internal carotid artery, accompanied by filaments of the carotid plexus and the sixth nerve. Situated on the outer wall are the third and fourth nerves, with the ophthalmic and superior maxillary

divisions of the fifth. The cavernous sinuses are connected by the circular sinus.

The ophthalmic vein, the third, fourth, and sixth nerves, and the branches of the ophthalmic division of the fifth pass through the sphenoidal fissure. The superior maxillary division of the fifth nerve passes through the foramen rotundum. The optic nerve, in close relationship to the anterior end of the cavernous sinus, passes through the optic foramen accompanied by the ophthalmic artery.

Symptoms and Signs.

The severity of these varies considerably with the size of the arterial rupture and the presence or absence of clotting. When arterio-venous communication is established the blood pressure in the cavernous sinus is raised, reversing the flow of blood in the ophthalmic veins. These pressure changes are also transmitted to the sinus of the opposite side, so that the symptoms and signs are occasionally bilateral.

The Bruit.—As a rule the first symptom is a noise in the head, which has been variously described as "humming," "buzzing" or "puffing." This noise may be either (1) continuous, with increase at each systole; (2) intermittent, corresponding to the heart systoles; or (3) continuous; it is a source of great annoyance to the patient and interferes with his sleep. The note varies with the size of the communication, and the intensity with the alterations in blood pressure, due to change of posture, exercise, &c. The noise may be so loud that it is audible to people near at hand; it may be heard in the temporal, parietal, and occipital regions, and in the ear and orbit. Pressure on the affected artery will usually stop it, but occasionally bilateral carotid pressure is necessary. Pressure at the inner canthus may stop the bruit. On auscultation it can be heard over the affected eye, usually over the whole head, over the facial bones, and along the course of the carotid artery involved. In traumatic cases it may be heard immediately the patient regains consciousness, but if the tear is a small one or if it is blocked by clot it may not become audible for some time. According to Rhodes [5] the average interval is 21 days, but the onset may be delayed for months or even years. In spontaneous cases it is usually sudden.

Exophthalmos is generally the next symptom to appear, and is classically but not invariably present. Typically it is of the pulsating type, but this again is not invariable, as is shown by the example of Delore, Aurand, and Roland.[6] The pulsation may be very slight, and detected only by pressure on the eye. At times the exophthalmos becomes so extreme that dislocation of the eye results. Williamson [7] writes: "On raising the upper eyelid to gain a better view, the eye suddenly shot out in front of the lids, like the forward dislocation that takes place when the speculum is pressed back after division of the tendons in the operation of excision."

Corneal ulceration may follow severe exophthalmos, and endanger the integrity of the eye. This is more likely to occur on account of the neurotrophic changes mentioned below.

Dilatation of Veins and Venules.—As a result of the increased blood pressure, dilatation and subsequent thickening of these vessels occurs at times with a pulsatile tumour, possibly with a thrill, situated typically in the upper and inner portion of the orbit on the affected side. Cauchoix [8] states that this tumour is present in from one-quarter to one-third of the cases. The dilatation may extend to the veins in the supra-orbital region or to the veins of the face as in Williamson's case,[7] in which pulsation and a thrill could be felt along these veins as far as the angle of the jaw. The congestion of the smaller vessels causes great vascularity and œdema of the conjunctiva. This chemosis may be so severe that the eye is hidden from view and ulceration of the conjunctiva ensue. Retinal examination shows dilatation and often pulsation of the veins, while the optic disc may be swollen.

Nerve Involvement.—Sometimes a nerve lesion is caused, either directly by the injury or indirectly by pressure and stretching in the sinus, in the sphenoidal fissure, or in the supra-orbital notch. In the two latter cases the superior maxillary division of the fifth nerve escapes. Stretching of the optic nerve follows the exophthalmos. Diminished vision or blindness, paralysis of the eye movements, ptosis, a dilated and fixed pupil, and loss of corneal sensation result. De Schweinitz and Holloway [2] state that 20·4 per cent. of cases of pulsating exophthalmos terminate in blindness, others have diminished vision, and not more than 11·1 per cent. retain normal vision. Of the nerves running in the sinus and its wall the sixth is that most commonly involved. Injury to the branches of the fifth nerve, which is the one least commonly affected, results in pain, as in Taylor's case[9] or in numbness, as in a case recorded by Berry.[10]

The symptoms described are typical of the condition, but are not necessarily all present. In Murray's case[11] there was bilateral exophthalmos, but no interference with the eye movements and no blindness. This is possibly accounted for by the presence of an unusually large communication between the two sinuses, causing bilateral exophthalmos while relieving pressure. Holmes[12] refers to a case in which the swelling of the conjunctiva was so great that the lower eyelid was covered and yet the eye was movable and the vision perfect.

In rare cases the eye-changes first appear on the side opposite to the lesion. This is difficult to explain, but possibly occurs when the arterial rupture is situated immediately opposite the opening of the circular sinus and the blood, as it is forced through the hole in the artery, transmits its pressure directly to the opposite side.

Differential Diagnosis.

The following conditions have to be differentiated from a carotid cavernous sinus aneurysm: (1) Pulsating orbital tumours—e.g., malignant tumours or cirsoid aneurysms. (2) Aneurysms of the ophthalmic artery in the orbit or within the skull. (3) Orbital arterio-venous communications—Lansdown's case.[13] (4) Orbital cellulitis. (5) Cavernous sinus thrombosis. (6) True aneurysms of the internal carotid artery in the cavernous sinus. These are much more rare than carotid cavernous sinus aneurysms and may, as in the case of Morax and Ducamp,[14] give rise to no symptoms unless the aneurysm ruptures. Barnard and Rigby [15] state that it is the aneurysm of the internal carotid alone which gives rise to the intermittent bruit. Holmes [16] and Adams [17] record examples of this condition, in each of which there was involvement of branches of the fifth nerve, but no mention is made of any exophthalmos, pulsation, or bruit. (7) Maynard [18] reported a peculiar case with pulsation and exophthalmos in which œdema of the optic nerve accompanied internal hydrocephalus.

There are a few cases on record which appeared clinically to be examples of this condition, but which at necropsy showed no communication between the carotid artery and the cavernous sinus.

Treatment.

Procedures adopted in the treatment of this condition are not without risk, and therefore one has to consider carefully whether these measures are justifiable. Rarely a spontaneous cure occurs. The condition may remain stationary, as in Williamson's case,[7] in which there was no alteration during a period of 23 years. A stationary case may again become progressive, as in the example of Bonnamour, Bujadoux, and Lyonnet,[19] where this occurred after an interval of eight years. Typically, however, the condition is steadily progressive and, although later the swelling and exophthalmos may diminish, there is a very grave risk of loss of sight. Further, the persistent noise in the head is a source of great annoyance to the patient from which he may demand relief in spite of the risk.

General measures are rest in bed on a light, dry diet, and the use of such drugs as iron lactate, potassium iodide, acetate of ammonia, and belladonna. Under such treatment cures have been recorded, but the results are so uncertain that the patient must be under careful observation so that an operation can be performed whenever necessary. If improvement occurs the patient must be warned of the danger of recurrence and advised to report at once any change in the condition. If the exophthalmos is very marked the eyes may be protected by suture of the lids. The subcutaneous or intramuscular injection, repeated every four to eight days, of 100 to 250 c.cm. of warm 2 per cent. gelatin solution in serum has been advocated.

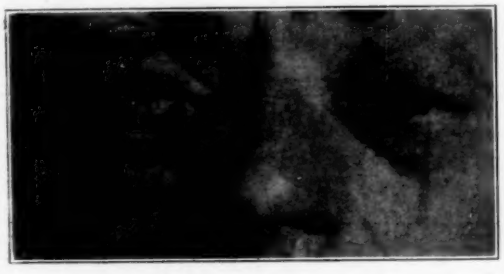
Direct attack on the aneurysm has been suggested but never attempted.

Measures applied to the carotid artery carry a greater risk in the spontaneous than in the traumatic group, as the patient is older and the conditions for surgical interference not so favourable. Further, as there is generalised disease of the blood-vessels, an efficient collateral circulation is less likely to become established.

1. Carotid compression by digital or mechanical means is tedious, and the results are uncertain. Clotting is more likely to ensue in the diseased vessel of the spontaneous cases than in the healthy vessel of the traumatic cases. Compression of the carotid is sometimes useful as an indication of the risks of ligature, for if it produces vertigo, motor, or sensory disturbances of the limbs or loss of consciousness, a preliminary course of carotid compression should be carried out in order to improve the collateral circulation.

2. Ligature of the common carotid is attended with risk both to life and to the normal functioning of the brain, as immediate ischæmia or later embolism

FIG. 1.



Condition before operation.

may cause temporary or permanent hemiplegia or aphasia. The mortality-rate of this operation for this condition is under 10 per cent., whereas ligature of the vessel in cases of wounds, tumours of the neck, &c., carries a much higher death-rate. Local anæsthesia diminishes the risk of cerebral complications, as if any ill-effect is noted the ligature can then be loosened. The occlusion of the vessel should be carried out very slowly and gradually during a period of some minutes, or a Crile's clamp may be temporarily applied. A disadvantage of this operation is that a collateral circulation may be rapidly set up through the external carotid artery; to avoid this the latter may be ligatured at the same time.

3. Ligature of the internal carotid artery avoids the disadvantage of ligature of the common carotid which has just been mentioned. The operation is rather more difficult, and for this reason it has been held that common carotid ligature is preferable in the spontaneous cases, as the vessel is probably diseased and there is risk of emboli becoming detached. A double ligature of the internal carotid has been attempted, the first ligature being applied in the neck and the second immediately proximal to the origin of the ophthalmic artery, but the result was fatal.

4. Bilateral carotid ligature. Following the ligature of the carotid artery the bruit usually ceases, but at intervals varying from hours to months it may return in a diminished form or with an altered note, and may then persist or increase in intensity or disappear again. With the return of the bruit the question of ligature of the opposite carotid artery arises. This should not be carried out until several months after the first operation, when the risk is apparently not greater than that attached to ligature of one carotid. Even then cure does not always result.

FIG. 2.

After ligature of veins at the inner canthus.

It has been stated that there is an ultimate diminution of cerebral function after ligature of both carotids, but this has not been confirmed.

Procedures on the orbital veins are of three kinds:—

1. Compression has been used alone or in combination with medical treatment, or combined with compression or ligature of the carotid artery. An interesting example of mechanical pressure in treatment is afforded by a case recently sent to see me.

A woman, aged 39 years, had suddenly noticed, after telephoning, a noise "like steam being let off" in the left occipital region. This was followed two weeks later by a swelling below the left eye. Five weeks after the onset there was ptosis, exophthalmos, and diplopia with increased swelling. On examination there was a bruit which ceased on pressure over the left common carotid and at the inner canthus of the left eye. The patient, who had noticed that pressure at the inner canthus gave some relief, was wearing pince-nez spectacles, and had had made a metal prolongation with a small pad to cause pressure at the inner angle of the left eye.

2. Other measures calculated to induce clotting, such as electrolysis, puncture with hot needles, and the injection of drugs such as perchloride of iron and iron lactate have in some cases resulted in improvement and cure, but on the whole have been considered dangerous. Now that the injection treatment of varicose veins has become popular, this method may receive more favourable consideration.

3. Operation on the orbital veins was first carried out by Lansdown[13] for a case of pulsating exophthalmos not due to carotid cavernous sinus aneurysm. This operation has been used (*a*) as a primary method of treatment; (*b*) combined with or secondary to carotid ligature.

Locke[3] says that under no condition should an attempt be made to perform an orbital vein ligature and a carotid artery ligature at the same sitting, as the results have been unfortunate.

The following types of operation have been used: (*a*) ligature of the veins at the inner canthus; (*b*) ligature of the superior ophthalmic vein far back in the orbit; (*c*) ligature of the inferior ophthalmic vein, which has been performed on one occasion.

I adopted the first of these methods in a case which came under my care.

A male, aged 40 years, was admitted on July 9th, 1927, with severe concussion and a fracture of the skull. An X ray examination confirmed the presence of a fracture in the right parieto-occipital region, but there was no

evidence of involvement of the body of the sphenoid. He was discharged on the twenty-third day. Three weeks later he returned, stating that a few days before discharge he had noticed a throbbing noise in the left ear but had not mentioned it. It had persisted since, and was less marked on sitting up, while he noticed that it disappeared with pressure on the upper and inner part of the orbit. Three days after discharge he had noticed swelling of the lower eyelids "like bladders," and three days later double vision on looking to the right; 16 days after discharge both eyes were bulging, the right more than the left.

On readmission there was a paresis of both external recti with congestion of the conjunctivæ, more marked on the right than on the left. The vision and fundi were normal. A bruit could be heard over the whole head, maxillæ and left mandible, and the left common carotid artery. It ceased on pressure over the left common carotid or on the upper and inner part of the left orbit. There was no pulsation of the eyes, no exophthalmos, and no pulsating tumour. The branches of the fifth nerve were not involved.

As pressure on the upper and inner angle of the orbit caused cessation of the bruit, the supra-orbital and angular veins were ligatured under local anæsthesia. The bruit did not cease, and there was considerable hæmorrhage which had to be controlled by packing. Soon after this operation there was a double pulsating exophthalmos with great œdema and congestion of the conjunctivæ, which bulged forward between the eyelids. The pupils were dilated and irregular, and there was paralysis of all the eye movements. The noise in the head varied in intensity and at times ceased. Vision of both eyes failed rapidly. On the fifth day after operation it was decided, on account of the failing vision, to ligature the internal carotid artery, using a fascial graft from the thigh as a ligature. This operation reduced the noise in the head so that the patient stated "it takes me all my time to hear it." No bruit could be heard over the head or over the left carotid, but there seemed to be a very faint one audible over the right carotid. The œdema of the conjunctivæ persisted for some time, but one month later it had lessened considerably, and after another three weeks had completely disappeared, although there was still great vascular congestion of the conjunctivæ on both sides.

At present there is no exophthalmos and no pulsation. He has lost the sight of both eyes. There is still slight increased vascularity of the conjunctivæ. The pupils are semi-dilated and fixed and the discs show optic atrophy. There is a slight degree of ptosis of the left upper lid; the eye movements are normal except for a very slight degree of weakness of elevation of the left eye.

In 1906 Jameson Evans[20] reported a case of pulsating exophthalmos in a child of 6 after a puncture wound of the lower lid. Improvement followed treatment by rest, potassium iodide, and calcium chloride. Mr. Jameson Evans informs me in a personal communication that in April, 1907, he ligatured the angular vein as a primary procedure and cured the exophthalmos and bruit. From the nature of the wound this case was probably one of arterio-venous communication in the orbit.

Ligature of these vessels in cases of carotid cavernous sinus aneurysm is not to be regarded lightly, as the control of hæmorrhage may be difficult on account of the extreme vascularity. This has been noted by other authors—e.g., Flemming[21] and Cauchoix.[8] The latter states that the operation is of use only if a dilated vein is to be seen. My case suggests that the severity of the condition may even be increased by this operation. This may be accounted for by the presence of a resulting thrombosis in the cavernous sinus or by the partial cutting off of the means of escape of blood from the sinus, resulting in further congestion of the ocular and orbital vessels. An exaggeration of the condition has occurred in other cases, but not to such an extreme degree. Pritchard and Burghard[22] found that after ligature of the right internal angular vein, which was accompanied by severe hæmorrhage, there was no perception of light for some days. Gifford[23] recorded a case in which, after ligature of the common carotid and a much dilated vein in the upper lid, there was a temporary increase in the severity of the symptoms with increased exophthalmos and ulceration of the cornea. In the same article he refers to five cases of pulsating exophthalmos, including his own, in which this operation was performed; in three of these there were "alarming symptoms." This operation appears to give the best results in cases of arterio-venous communications in the orbit, but in carotid cavernous sinus aneurysm the results may prove less satisfactory than those of carotid ligature.

Pollet and Decherf[24] used periarterial sympathectomy in one case, with a short temporary improvement followed by a rapid increase in severity.

Resection of the cervical sympathetic, combined with carotid ligature, has been advised in order to produce a vasodilatation and so diminish the risk of cerebral complications. The use of vasodilator drugs for the same purpose has also been advocated.

Ridley[25] refers as follows to a case in which common carotid ligature had failed: "In this case, long after ligation of the common carotid, the facial artery dilated until it became as thick as one's little finger, where it joined the orbital arteries. It was tied. The proptosis and the pulsation all ceased, and that patient, although she lost her vision under pressure, had no trouble and practically no proptosis now."

Progress.

In favourable cases the bruit disappears immediately but may return, to disappear again later. Rivington,[26] in an excellent article, referred to a case in which Corner ligatured the right common carotid artery; the bruit persisted for 12 years and then disappeared. The interval here was so long that the cure would appear to be spontaneous rather than a direct result of the operation. The remaining symptoms improve slowly, the exophthalmos and chemosis taking a period of three to six weeks to disappear. The conjunctival congestion persists for a still longer period. The muscular paralysis and vision improve slowly.

De Schweinitz and Holloway[2] state that cerebral complications occur in 9·8 per cent. of common carotid ligations. This complication may arise at a considerable interval after operation, and convalescence must therefore be slow.

Below is a table taken from Locke's article[3] which tabulates the results. In comparing the mortality of common carotid and internal carotid artery ligatures in this table it is to be remembered that only the former was used in the earlier days, when infection increased the number of fatal cases.

Pulsating Exophthalmos: 1809 to 1923.

Percentages.	Digital compression (100).*	Ligation common carotid(234).	Ligation int. carotid (38).	Bilateral ligature (21).	Ligation orbital veins (19).	Ligation artery and veins (24).	Rest and medication (28).	Gelatin injections (16).
Cured	26·41	65·81	21·05	61·91	42·12	37·50	14·29	31·25
Imp.			65·79		26·31	33·33	35·72	31·25
Neg.	73·95	23·93	5·26	19·05	26·31	12·50	42·88	37·50
Fatal	—	8·98	7·90	14·28	5·26	16·67	3·57	0
Unst.	—	1·28	—	4·76	—	—	3·57	0

* The figures in parentheses indicate the number of cases.
Imp. = improved. Neg. = negative. Unst. = unstated.

I wish to express my indebtedness to Mr. J. Jameson Evans for his information and help in the writing of this article.

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THE AFTER-CARE OF EPILEPTIC CHILDREN.

A SURVEY OF CHILDREN WHO HAVE ATTENDED A RESIDENTIAL SCHOOL FOR EPILEPTICS.

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THIS survey has to deal with a total of 351 children who left the Lingfield Colony school during the period of eight years between Oct. 1st, 1919, and Sept. 30th, 1927. Children who attended the school for periods shorter than six months are not included.

Preliminary Note.

It is essential first to define the type of child dealt with. It would be a mistake to suppose that in a certified residential school any and every child subject to epileptic fits may find a place. The Board of Education divides epileptic children into two classes: those whose disease is so severe that it precludes them from attending ordinary elementary schools, and those whose disease is, in this sense, "not severe." The latter class outnumber the former by about two to one.[1] Only "severe" cases are eligible for residential special schools and, as a matter of fact, only one-fifth of all the severe cases are accommodated there. Of the remainder a few are retained at elementary schools, some drift into poor-law and other institutions, while half of them, numbering in England and Wales at least 1350, are allowed to remain at home receiving no education at all.[1] The principal reason for this unsatisfactory state of affairs is deficient residential school accommodation; other reasons are unwillingness on the part of parents to let their children leave home, or neglect on the part of local education authorities.

It will be understood that the parents of children who are a bother to them on account of frequent fits or difficult temperament will press for their admission to a residential special school; and there is, no doubt, an unduly high proportion of such cases in the group under review.

Only "educable" children can be admitted. In this connexion the "educable" class includes, roughly speaking, all normal, dull and backward and feeble-minded children, but excludes imbeciles and idiots. By Binet or similar mental tests the lower limit of educability is reached with an intelligence quotient in the neighbourhood of 50. It must be remembered, however, that there are among epileptics a certain number of children whose intelligence either remains stationary or actually deteriorates, so that from time to time children in a school for epileptics fall from the educable into the ineducable class, and have to be discharged.

A further point with regard to the type of child requires mention. Most of the certified schools for epileptics are, like Lingfield, voluntary in character. As the demand for places much exceeds the accommodation the authorities have considerable powers of choice, and can exclude, if they wish to, children of lower mental grade or antisocial tendencies. Obviously the more carefully the cases are chosen the better will the after-care statistics be. For this reason it is very probable that other special schools might be able to show results rather more favourable than those recorded here.

To sum up, we are here dealing with a group of educable children of school age, all of them certified by medical officers specially approved by the Board of Education to be suffering from severe epilepsy. The mental grade of these children varies from normal down to feeble-minded, and the group probably contains an undue proportion of cases liable to frequent fits or antisocial conduct.

General Results.

Of the 351 children who left our school between 1919 and 1927, 4 died at school, 3 of them of epilepsy, and 1 of pneumonia. It has been found impossible to trace 15 others, so that there remain 332 cases, upon whose after-career report can be made. The present whereabouts of these 332 cases is shown in Table I.

TABLE I.

—	Number and percentages.					
	M.		F.		Total.	
Not in Institutions.						
Self-supporting—						
No fits	27	16·1	18	17·3	45	16·6
Having fits	6		4		10	
Partly self-supporting—						
No fits	6	9·8	4	10·2	10	9·9
Having fits	14		9		23	
At day school—						
No fits	3	1·5	2	1·6	5	1·5
At home, unemployed—						
No fits	3	11·7	0	17·3	3	13·8
Having fits	21		22		43	
In Institutions.						
Inst. for epileptics	39	19·0	27	21·3	66	20·0
Poor-law or other inst.	15	7·3	6	4·7	21	6·3
Mental deficiency inst.	13	6·3	19	15·0	32	9·6
,, hospitals	15	7·3	4	3·2	19	5·7
Died.						
—	43	21·0	12	9·4	55	16·6
Total	205		127		332	

Perhaps the most remarkable finding in this table is the number of deaths. The average length of time since these children left school is four and a half years, and during that period 1 in 6 of them have died; the average stay of the 351 children at school was exactly three and a half years, and during that period only 1 in 88 died. The annual death-rate per 100 among those at school was 0·3, among those who have left 3·7. In the latter group the death-rate among boys is more than twice that among girls, a fact for which it is difficult to account. If the children who have died were excluded from the table the remaining percentage differences between the sexes would be less marked. The larger proportion of girls living at home without employment is, of course, what one would expect. Where there is reason to think that the girls are of material help in the work of the house they are included in the partly self-supporting class.

The small number of children still attending day school are likely to become self-supporting in the future, and may fairly be added to that group. If this is done the table may be summarised as follows:—

	Per cent.
Wholly or partly self-supporting	28·0
At home, unemployed	13·8
In colonies or other institutions for epileptics	20·0
In mental hospitals, Mental Deficiency Act Institutions, or poor-law institutions	21·6
Dead	16·6

Or, roughly speaking, of every 14 children who have passed through our school 4 are more or less self-supporting, 2 are at home without work, 3 are in epileptic colonies, 3 in other institutions, and 2 have died.

[1] Annual Report of Chief Medical Officer of Board of Education, 1924, p. 79.

Mr. Huddy: References.

(*Continued from previous page.*)

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Nature of Employment.

In the majority of cases the nature of the employment of those who are self-supporting has been ascertained. Thus among the males there are 8 labourers, 7 shop assistants, 5 farm workers, 4 carpenters, 4 gardeners, 3 errand boys, 2 clerks, 2 soldiers, and 1 each of the following occupations: baker, boot repairer, coalman, decorator, fur trade, golf caddie, laundryman, lino factory, milkman, motor driver, motor mechanic, hotel porter, sailor, signwriter, and stoker in the Navy. Among the females there are 11 in domestic service, 3 waitresses, and 1 each of the following: coil winder, companion, laundress, mantle maker, ornamental flower worker, shop assistant, and ticket stamper. It will be seen that the occupations are mostly pretty simple in nature, and the list is worthy of study by those who are responsible for the education and training of epileptics.

It is interesting to note that one-half of the children who have subsequently become self-supporting, never received any bromide, luminal, or other anti-convulsive medicine at Lingfield. This surely suggests that the most effective therapy for epileptics is to be found outside the medicine chest.

Marriage.—Only one case in the series, a girl, is known to be married, and so far as our information goes there is no record of illegitimate children. It must be remembered, of course, that there is no one over 25 years old in the series, and that the average present age is about 19.

Influence of Fits.

The serious handicap that fits provide in the quest for employment is sufficiently shown in Table I. This handicap is further demonstrated if the present state of the patients is shown in relation to the fit incidence before they left Lingfield. The series was divided into three groups, comprising those who had no fits in their last two years at school, those who had occasional fits (less than one major fit a month or a few momentary attacks), and those who had more frequent fits. The results are shown in percentages in Table II.

TABLE II.

—	Frequent fits (206*).	Occasional fits (66*).	No fits (60*).
	Per cent.		
Partly or wholly self-supporting	12	37	73
At home, unemployed	16	18	2
In epileptic institutions	22	24	8
In other institutions	28	12	12
Dead	22	9	5

* Cases (also in Table III.).

It will be seen that the number of fits has a profound effect both upon the death-rate and the prospect of employment.

Influence of Intelligence.

The epileptic is subject to two other serious handicaps besides his fits. First, many epileptics are difficult to get on with, or may even possess marked antisocial tendencies. Secondly, a defect of intelligence is often present. The temperamental handicap does not lend itself to measurement, but the handicap of intelligence can be fairly accurately measured by mental tests. For the last seven years every child's intelligence has been assessed annually by a Binet (Burt's London Revision) test, and an intelligence quotient (I.Q.), obtained by dividing the mental by the physical age. The relation between the intelligence quotient last obtained before each child left the school and his present state is shown in the following table (Table III.), which demonstrates that the degree of intelligence also has a profound effect on the death-rate and on the prospect of employment. The number of young adult epileptics of low grade who are living at home again calls for comment.

There is, generally speaking, a fairly close, but by no means uniform, relation between fit incidence and mental retardation, and this is evidenced by the similarity between Tables II. and III. Investigations to find out whether the age of onset of the disease had any influence upon the likelihood of an epileptic becoming self-supporting proved somewhat unexpectedly to be inconclusive. Similarly the presence of a family history of epilepsy or insanity seems to have little influence on the social outlook.

TABLE III.

—	Normal. I.Q. 90 or over (23*).	Dull and backward. I.Q. 70–89 (92*).	Feeble-minded. I.Q. 50–69 (80*).	Imbecile. I.Q. below 50 (42*).
	Per cent.			
Partly or wholly self-supporting	78	39	12·5	2
At home, unemployed ..	9	15	20	29
In epileptic institutions	4	27	26	—
In other institutions ..	—	10	27·5	45
Dead	9	9	14	24

There are 26 cases of hemiplegia in the series. These patients have a heavy additional physical handicap, and it is not surprising to find that only three of them are in the self-supporting group.

Ineducable Children.

For the most part children remain at the Colony school until they attain the age of 16. They may leave before that age for a variety of reasons. The school authorities may discharge a child, as explained above, because he is incapable of further education, and he should then be dealt with by the appropriate mental deficiency authority. As a matter of fact, out of 37 cases in the present series discharged during their school career as ineducable, less than one-third are in mental deficiency institutions. One-quarter have died, and the remainder are either at home or in some other form of institution, not one of them being able to contribute in any degree to his own support.

Promising Cases.

At the age of 16 it is the policy to discharge to their homes children whose fits are infrequent or have been arrested altogether, and whose intelligence and temperament are near enough to the normal to enable them, in our judgment, to earn a living. Sixty-three children in this series were discharged on these grounds, 55 of whom are now wholly or partly self-supporting. One has died, four are out of work, three have got back to epileptic colonies, but none are in mental hospitals, mental deficiency, or poor-law institutions. It may be claimed, therefore, that authorities in residential schools are fair judges of social efficiency.

Cases Recommended for Notification at the Age of Sixteen.

In other cases the parents are advised that a transfer should be made to one of the adult homes at Lingfield or at another colony for epileptics, or, where occasion demands it, notification to the appropriate mental deficiency authority is recommended. Unfortunately these recommendations are frequently disregarded. Parents prefer that children should return home, while certification under the Mental Deficiency Acts is not carried out, because of the deplorable lack of institutional accommodation for defective epileptics. Certification will no doubt become more common under the new Act which allows certified cases to remain at their homes under supervision, but for epileptics this is a doubtful blessing, for of all classes of certifiable or certified mental defectives, probably they stand most in need of institutional treatment. There are in this series 48 cases where notification to mental deficiency authorities was recommended at the age of 16, but less than one-third of them are in mental deficiency

institutions. One-quarter have died, and the remainder are either in other forms of institution or unemployed at home, and among the 48 only one is able to contribute, and that slightly, to his own support.

Methods of Inquiry.

This investigation was carried out by inquiries addressed to the patients themselves or to their parents in the first instance. Failing a reply from this source application was made to local education or poor-law authorities, who, in many cases, were good enough to go to considerable trouble to follow up the children. The reading of the letters and reports brings one into very close touch with the life of epileptics and their relation to the community. The presence of an epileptic in a home often means unhappiness to the family. Many letters testify to this, and go to show the inadequacy of our present arrangements for meeting the need. Extracts from two letters and a report may be quoted here. The letters refer to children who had been discharged from Lingfield as incapable of further education.

"I am sorry to say she is getting worse every day and very violent in her temper, she has got me, also her father bruised and scratched and pieces took out of us. She is really getting too much for us. We have tried everything to see if she could alter her fit of passion, but we can't, so our doctor said she will have to go away because my health is getting too bad. They took her to our mental hospital on Xmas Eve but brought her back, she wasn't bad enough for there."

"... his mental condition is much worse, also the fits about 40 or 50 a month, he is in bed days at a time, he is at home with us, we have tried at quite a number of homes for such cases but we have not been able to get him in anywhere, as I have four other children he is getting past my management as he has grown quite a big boy."

The report is of an intelligent girl, who at her mother's request left here at the age of 16. When her mother realised her mistake she was advised to apply to the local guardians to place the girl in a home for epileptics.

"After the girl came home from Lingfield the mother applied to the Guardians but they placed her in a ward with blind senile old women and she was so unhappy that she was taken home again after a few days. Her mother refused to consider the idea of reapplying, but there does not seem any other means of solving the difficulty."

Such letters and reports are not at all uncommon in this series.

Conclusions.

This investigation shows that the death-rate rises very rapidly after children have left a residential school for epileptics. Rather more than one-quarter become wholly or partly self-supporting, and this group contains a large proportion of those whose intelligence was high and fit incidence low at the time they left the colony. About 1 in 7 of the cases are living at home without employment of any kind. Most of these would be better cared for in institutions, and many of them, especially the lower-grade cases, are urgently in need of institutional care.

Over 40 per cent. are in institutions. Most of those in poor-law institutions would probably be more suitably placed either in epileptic colonies or in mental deficiency institutions. Doubtless some of the lower grade cases in epileptic colonies should be dealt with under the Mental Deficiency Acts were suitable accommodation available for them.

Epilepsy is usually a lifelong disease, which carries with it marked social handicaps. Its victims, in our country, run into many thousands. Few would be found now to endorse the teaching of Gowers that epilepsy is one of the diseases most amenable to treatment by drugs. Both before and since the time of Gowers there has been much laborious research into the causation and nature of the complaint, but with little definite outcome. Failing advances in therapy, empirical or based on more extended knowledge of the underlying pathology of epilepsy, it behoves us to inquire what is the social treatment meted out to the various classes of epileptics, and along what lines they can be most happily and effectively dealt with. To such an inquiry the present paper is intended to be a small contribution.

Clinical and Laboratory Notes.

A FATAL CASE OF POST-VACCINAL ENCEPHALITIS.

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and
R. Oddie, B.M., B.Ch. Oxf.,
House Physician to the Hospital.

In the case under review the exact relationship of the fatal illness to the preceding vaccination is very obscure. Other cases have been observed and are being investigated, but this one is recorded now since it shows unusual features of special interest. We use the term encephalitis for convenience rather than in any narrow specific sense.

History of the Case.

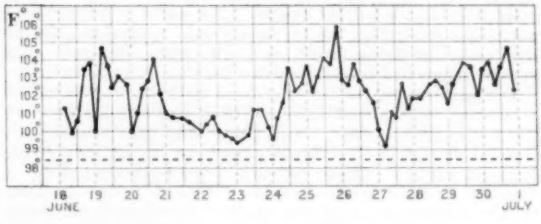
S. C., female, aged 9 years. Admitted to St. Thomas's Hospital June 18th, 1928. Died July 1st.

Apart from an attack of chicken-pox at the age of 7 years, this child's previous history was unimportant. She had not been previously vaccinated. Vaccination was performed by Dr. C. J. E. Edmonds on June 5th, and took a normal course. On June 12th she was sent home from school on account of headache and dizziness and she vomited once. The headache persisted, she became drowsy, and on the 15th vomited. Thereafter she was confined to bed. On the 16th her condition was unchanged, but the temperature rose to 102·5° F. and she vomited again. On the 17th her temperature rose to 105° F. Retention of urine occurred for the first time, and from that day onwards regular catheterisation was required.

She was seen by one of us (A. E. R.) on June 17th. She was then practically unconscious with a flushed face, pulse 128, pupils small and reacting to light. She could not be made to talk, but did put out her tongue when asked. Pharynx, heart, lungs, and abdomen were normal. Both knee-jerks were absent but there was an extensor response in the right big toe. The abdominal reflexes were absent. There was no retraction of neck and no rigidity of neck muscles. Temperature at 11 P.M. was 103° F.

Condition on Admission.—She was admitted into the hospital on the following day, June 18th. Chart 1 gives a record of her temperature up to the time of her death. She was practically unconscious on admission but could just be roused and did murmur her name. Her condition

Chart 1.



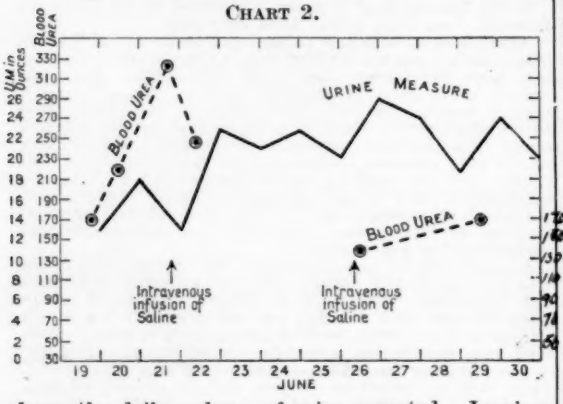
was the same as on the previous day, although now an extensor response was present on both sides. Her legs were flaccid and painful stimulation only evoked slight contraction of extensor muscles of thighs. Arms were slightly spastic and responded more readily to stimulation. Her eyes were half closed. No paralysis of ocular muscles was observed and the optic discs were normal. Tongue furred. Her pulse was rapid throughout, generally speaking between 120 and 140. Respirations varied from 24 to 40. No changes developed in the cardiovascular system, lungs, and gastro-intestinal system.

She remained in practically the same condition until her death. At the best she was profoundly lethargic when not absolutely comatose. At times, however, a slight glimmer of consciousness did return. She appeared, for instance, to recognise her parents and murmured "mother," and one day asked for a drink. Her position hardly varied from day to day. She never moved her legs at all and they were quite flaccid throughout. Her arms were slightly spastic, the left more so than the right. They were, as a rule, pressed across her chest, but if they were displaced she would slowly bring them back. Only on one or two occasions

was there any indication of voluntary movement of arms Her head was usually slightly inclined to the left, but there was no conjugate deviation of eyeballs. If the head were displaced to the right it would in time make its way back to the left. At times there seemed slight rigidity of the neck muscles. Her eyes were never closed, leaving a gap of about an eighth of an inch, which was probably the cause of a slight corneal ulceration. Independent movements of eyeballs took place. The child lost flesh, but did not become emaciated, weighing 42 lb. at death. The urine was free from albumin on admission, but a trace appeared after a few days and a few pus cells were observed. Leucocyte count 5400.

Lumbar puncture was performed on June 19th, 27th, and 30th; there was no increase of pressure and the fluid was quite transparent. Its urea content was very high, 180 mg. per cent. Owing to the fact that in some cases a high blood-urea had been recorded, this was investigated on June 19th, although the urine was then free from albumin. The urea was found to amount to 170 mg. per cent. Six estimations of the blood-urea were made by one of us (R. O.), and the records are shown in Chart 2, which also

CHART 2.



shows the daily volume of urine excreted. In view of the high urea concentration an intravenous infusion of 1 pint of saline was given on June 21st, and again on June 25th, with temporary benefit. Rectal injections of normal saline were administered every eight hours, but these had to be discontinued after three days, as they were not retained. The percentage of urea in the urine was 3·5 on June 21st and 4 per cent. two days before death. No casts were present with the exception of an occasional granular cast at the end, together with a little pus. *B. coli* was grown from the urine on July 2nd.

On admission, the inner side of both knees presented a reddish spot about the size of a sixpence, and over the lower end of each tibia there was also present an elongated patch of redness about 1½ in. in length by ½ in. in width. These patches were surrounded by a sharply defined white areola. Within a day or two of her admission a blister slowly developed on three of these patches. From their position these were explainable as the result of pressure, those on the knees being situated exactly where the knees come into contact when the legs are lying side by side and those lower down where the legs naturally cross each other.

Treatment.—As it was almost impossible to get her to swallow anything, the child was fed throughout by the nasal tube. She was put on hexamine grs. v. three times daily for ten days. She was also given an injection of 0·3 g. of stabilarsan on the day of admission.

The *post-mortem examination* was performed by Dr. J. F. Taylor, who contributes the following notes:—

The brain showed no definite increase of cerebro-spinal fluid. The fluid was clear and no meningitis was present. The convolutions were normally defined. General congestion of surface vessels was noticeable, rather more marked at the base. Sections through all parts of the hemispheres, mid-brain, cerebellum, &c., showed congestion but no hæmorrhages. No areas of softening were to be detected. The spinal cord presented a similar appearance.

The kidneys weighed 4¼ oz. They were congested; the capsules stripped readily, and there was no obvious inflammation. The bladder contained turbid urine and showed signs of recent cystitis. Nothing abnormal was detected in the remaining organs and the vaccination scabs were normal. Microscopical examination was made of portions of cortex, basal ganglia, crura cerebri, pons, medulla, cervical and lumbar cord—with almost negative results. A moderate congestion was found, but no perivascular or diffuse infiltration. No hæmorrhages, thromboses, or other pathological changes were observed. The condition of the kidneys was interesting, though evidence of definite nephritis was very scanty. The glomeruli were slightly swollen and showed a multiplication of nuclei, and there was some cloudiness and swelling of the tubular epithelium. A curious feature was the deposition of minute collections of calcium salts in many of the convoluted tubules.

Remarks.

Two other children in the family were vaccinated at the same time as this one. A sister did not take, but a brother went through a mild illness from which he has made a good recovery. He was vaccinated on the same day, June 5th, and on June 14th and for several days afterwards, he was out-of-sorts, feverish, and drowsy, with occasional vomiting, symptoms which it is not unreasonable to suppose represented a mild attack of the same illness from which the patient died.

1. The patient suffered from a short febrile illness, the earliest symptoms of which appeared on June 12th, seven days after vaccination, and death occurred on July 1st after an illness of 19 days.

2. The main symptoms were indicative of a profound disturbance of the nervous system. The striking clinical feature of the case was the profound lethargy, and we would emphasise the remarkable immobility of this child throughout her whole illness. Seen day after day, she lay in exactly the same position, with the same slightly flushed cheek and slightly open eyes, giving no indication of life whatever other than her faint respiratory movements. She never moved her legs at all, and her arms were almost as motionless. Lethargy is, of course, a well-known feature in some cases of encephalitis, but the profound immobility of this child was very striking.

3. The scanty pathological changes in the brain and spinal cord are noteworthy. The post-mortem examination revealed nothing more—both to naked eye and microscopical examination—than general congestion.

4. Marked urea retention. The blood-urea was 170 mg. per cent. at the first estimation; it rose as high as 318 on June 21st, and three days before death it amounted to 170. The cerebro-spinal fluid also showed a high percentage of urea, 180 mg. per cent. on June 19th. This marked retention of urea, together with profound coma, naturally suggested uræmia, but the percentage of urea in the urine on two estimations amounted to 3·5 and 4 per cent., and at the beginning the urine was absolutely free from albumin, nor was there at any time more albumin than could be accounted for by the mild cystitis. Dr. Taylor's report on the microscopical condition of the kidneys shows, moreover, an absence of any real nephritis. The high urea percentage may, therefore, arise in some manner hitherto unsuspected. We conferred with Dr. O. L. de Wesselow on this point, and he suggested that it might be due to desiccation of the child, coupled, perhaps, with increased metabolism. Some loss of flesh certainly took place, but death occurred before any real emaciation. This high concentration of urea in the blood has been noted in other cases, but it would appear from ours that it may occur without any convincing evidence of nephritis.

The absence of any gross changes in the brain characteristic of encephalitis may, on the other hand, lend support to the view that the symptoms were more allied to those of uræmia, and due to a failure on the part of the kidneys to fulfil their functions, despite the absence of gross evidence of nephritis. Further observations on similar cases may throw light on this curious feature.

A CASE OF PERSISTENT METATARSALGIA

TREATED BY OPERATIVE MEASURES.

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TRUE Morton's metatarsalgia with dropping of the anterior arch of the foot can be treated very satisfactorily and with good results by the usual orthopædic corrective appliances. Now and again, however, cases do not respond to these more simple methods of treatment. An example is detailed below, with the method used to overcome the deformity.

Radiogram showing portions of metatarsal bones removed at operation, and condition of corresponding bones on other side.

An unmarried woman, aged 42 years, gave a history of pain, neuralgic in type, on the dorsum of both feet and in the balls of the second, third, and fourth toes. The pain had persisted for three years and was progressive, in spite of treatment by various doctors who had supplied her with metatarsal bars to her boots and various forms of arch supports. On examination the patient—a not unduly heavy or fat woman—was found to have marked bilateral dropping of the anterior arches with hallux valgus. There was some tenderness on pressure on the under-surface of the balls of the second, third, and fourth toes, more marked in the right foot than the left. Both feet were quite soft and supple and X ray examination revealed no arthritic changes. She was measured for, and supplied by an instrument maker with, a pair of boots of the correct size and a pair of transverse arch supports. Supplementary treatment consisted of massage, radiant heat applications, and foot drill three times a week.

At the end of two months the condition was unimproved. In fact, her feet were if anything rather worse than they were before. It was therefore decided to operate. Using Esmarch's bandages and a tourniquet, the operation was practically bloodless. A small semilunar incision was made on the dorsum of the right foot (the worse foot) half an inch proximal to the junction of the toes with the foot. The skin flap thus formed was turned upwards. The extensor tendons were then exposed and retracted out of the way, bringing into view the second and third metatarsal bones. The capsules of the metatarso-phalangeal joints were then opened, and the heads of the metatarsal bones, freed from surrounding structures, were removed by cutting through the shafts proximal to the heads with bone-cutting forceps. The tendons were subsequently replaced and the wound closed. The operation took only a few minutes. Ten days later the patient was walking about in comfort with transverse arch supports in her boots and without a stick. At the present time, three months after operation, the right foot is entirely free from pain, and she is asking that the other foot should be similarly treated.

Although in this operation the transverse arch of the foot was permanently weakened, the end-results seem to have justified the means taken. The small amount of arch which the patient had before the operation is now more than reconstituted by the mechanical arch support which she is wearing, and—what is more important—she is free from pain.

DIPHTHERIA AND THE "PROTECTIVE" POWER OF SERUM.

BY JOHN GORDON, M.D. LEEDS, D.P.H.,
AND
JACK SCIENCE, M.D. LEEDS, D.P.H.

(From the Department of Pathology and Bacteriology, University of Leeds, and the City Infectious Diseases Hospital, Seacroft.)

IN a previous paper[1] describing a study of 25 cases we showed that serum from patients suffering from diphtheria may be deficient in the property of protecting red blood corpuscles from the hæmolytic action of sodium ricinoleate, a property normally present in human serum. The marked hæmolytic action of sodium ricinoleate on red cells is markedly diminished on addition of serum, and this action (protective action) of serum has been attributed by E. Ponder[2] to the protein components of serum. It was shown that this protective power returned in simple uncomplicated cases of diphtheria by the end of the third week. While in a few cases of diphtheria developing paralysis there was no marked interference with the protective power of the serum, in most cases of diphtheria where paralysis occurred this diminished protective power lasted for some time and even up to 80 days, and it was suggested that the protective power of the serum of a patient with diphtheria should be tested against a hæmolysin at different stages of the disease, and compared with a normal serum with a view to assisting prognosis with regard to the possible development of paralysis.

In this paper a further series of 50 cases of diphtheria were examined with a view to confirming and extending the previous observations. The experimental details were the same as in the previous paper.

The patients were bled from the arm and the serum separated. The serum was tested as soon as possible on the same day, being kept in the refrigerator till required. The test was carried out in the following way: to each of three narrow tubes were added 0·5 c.cm. of the patient's serum, and to three other tubes 0·5 c.cm. of a healthy person's serum. To tube 1 was added 0·1 c.cm. of a 1 per cent. solution of sodium ricinoleate in normal saline; to tube 2, 0·2 c.cm.; and to tube 3 was added 0·3 c.cm. The mixtures were shaken and allowed to stand at room temperature for half an hour. Then 0·2 c.cm., 0·1 c.cm., and 0·05 c.cm. were taken from each tube and added to 0·5 c.cm. of a 3 per cent. suspension of washed ox blood cells. These were put in the incubator at 37° C. for one hour, and then the varying degrees of hæmolysis were read.

Amount of 1 per cent. sodium ricinoleate added to 0·5 c.cm. serum.

—	0·1 c.cm.			0·2 c.cm.			0·3 c.cm.		
	c.cm. of mixture.								
	0·2	0·1	0·05	0·2	0·1	0·05	0·2	0·1	0·05
Patient's serum	††	–	–	†††	†	–	††††	†††	–
Control serum	–	–	–	–	–	–	†	–	–

†††† = complete hæmolysis. ††† = almost complete hæmolysis.
†† = partial hæmolysis. † = trace of hæmolysis.
– = no hæmolysis.

The patient's serum showed marked lack of protection.

An example of the reading obtained from a case of diphtheria that developed palate and ocular paralysis is here given. The blood was taken on the twenty-fifth day of the illness.

Fifty consecutive cases of diphtheria were tested, including cases of moderate and severe throat lesion.s

[1] Quart. Jour. Med., 1928, xxi., 345.
[2] Ponder, E.: Proc. Roy. Soc. B. London, 1923, xcv., 42; Ibid., London, 1925, xcviii., 484.

Of these 39, or 78 per cent., showed complete protection by the second to the third week, and these cases did not develop paralysis. Of the remaining 11 who showed lack of protection prolonged beyond the third week, 8 developed paralysis. In one of the cases developing paralysis, lack of protection continued up to five weeks after the onset of the disease.

This series of cases, taken in conjunction with the 25 already described, indicate that a knowledge of the protective power of the serum about the third week might be useful in assessing the possible development of paralysis in a case of diphtheria, from which the ordinary clinical symptoms have already disappeared, the probability being that this lack of protection of the serum is in some way related to the action of the diphtheria toxin.

Public Health Services.

LIVERPOOL PORT SANITARY AUTHORITY.

IN his report for 1927 Dr. A. A. Mussen mentions 5644 visits of inspection paid to ships, of which 948 (930 last year) had nuisances on board; there were 3297 (3099) dirty forecastles and 409 (254) foul water-closets. The men are being more considered; the Board of Trade, the Port Sanitary Authority, the unions, the shipping companies, all coöperating. Quarters are being put at the after-end of ships, cubic space is being increased, bunks are better, vermin-proofing better, washing places more usual, hospital accommodation more frequent, and, thanks in large measure to the Board of Trade, food is much better. But plans of new ships should be approved by authority, and when as much attention is given to the health of seamen as to that of any other section of the community, standards of accommodation will be international. Cleanliness of crew spaces depends on discipline and should be examined daily. Of 38 cases of enteric fever mentioned as occurring in voyages that brought ships to Liverpool, 34 were in seamen; of 18 cases of dysentery 12 were among the crews, 1 was a military passenger, the other 5 were "distressed British subjects." Of tubercle 59 cases were landed (origin unstated) this year, and two cases of encephalitis lethargica. No cases of plague, cholera, or yellow fever were landed. The prevalence of these diseases through the world in 1925–27 is stated with a most interesting map. Plague was an anxiety in 1927 in the Indian Ocean, Levant, West Africa, and South America; cholera in the Indian and China seas; yellow fever in West Africa, Rio, and there were single cases reported in Bangkok and Rangoon, a very important matter if the diagnoses were beyond cavil. Plague is being constantly watched for; the docks are made as nearly rat-proof as possible, ships from suspected ports are searched for rats; 6781 rats from ships and quays were pathologically examined and all were plague-free.

The seamen's dispensary served more patients in 1927, fresh cases 1842 (1360), total attendances 55,063 (41,720); evening clinics are now held twice a week. Cures are reported, 421, "an improvement of 80 per cent."; as last year, of every 10 cases 6 were gonorrhœa, 3 syphilis, and 1 soft chancre, but gonorrhœa cases are apt to delay attending till they have become chronic; 20 per cent. of the syphilis cases are in the pre-Wassermann stage. Of 20,121 alien arrivals examined to see if they have any disease dangerous to the public health or likely to cause a public charge, 6 were certified, 3 for venereal disease, 2 for mental deficiency, 1 for phthisis. Medical officers of the Board of Trade inspect all emigrants, second class or steerage, and crews of vessels bound for America. There were 123,801 emigrants and 16 were rejected for infectious disease. Of 80 cases of trachoma or conjunctivitis 77 sailed later; 3 returned home.

The recent regulations in regard to preservatives in food and imported food seem to work well, for there are no complaints of difficulty. Far less unsound food had to be condemned and "utilised under supervision" this year, 2621 (5482) tons, although the amount is still enormous. Everything is done to ensure that the functions of the port medical officer shall be effectively discharged with the least possible delay to ships. Now that, owing to the opening of the new Gladstone Dock, vessels can enter the docks at all states of the tide, a medical officer is on duty day and night to deal at once with infectious diseases. Ships from infected ports can be promptly dealt with, as the authority has a new motor launch with a speed of 11½ knots, and good accommodation for crew, a medical officer, and four patients on the way to hospital. It is named the *Moyles*, after Dr. J. G. Moyles, who has long been the chairman of the port authority.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the 1927 statistics of two Scottish and five English towns:—

Name of district and estimated mid-year population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Diarrhœa, &c., under 2 years.	Maternal mortality from childbirth.
Edinburgh C. (425,147)	17·9	14·3	1·20	1·68	2·4	1·8	80/33	5·5	6·9
Paisley B. (87,010)	20·6	13·1	0·99	1·33	2·3	1·9	90/44	7·2	5·5
East Ham C.B. (146,900)	15·8	9·7	0·93	1·19	2·0	1·5	53/—	3·4	5·2
Coventry C. (129,500)	15·9	10·9	1·07	1·20	2·2	1·1	63/37	4·3	4·8
Halifax C.B. (96,270)	13·8	16·4	1·00	1·64	3·1	2·6	90/51	6·7	7·5
Great Yarmouth C.B. (58,500)	16·0	13·6	1·11	1·45	2·1	1·8	52/31	3·2	1·1
Dover B. (39,530)	18·7	12·4	1·29	1·59	2·8	1·7	44/18	2·6	3·8

C = City. C.B. = County borough. B = Burgh or Borough.
— = No information.

Edinburgh.

Dr. William Robertson, referring to the reduction in infant mortality, says improved housing conditions ought to save many more lives of children. Four whole-time lady clinical medical officers have been appointed in order to get into more intimate and personal touch with the mothers in the various districts of the city. An effort is also being made to provide instruction in cookery and the preparation of nourishing meals with rudimentary apparatus. The fact that there must be a delay in the provision of good houses is felt to be no reason for the delay in the provision of good food. A beginning has been made with the St. Leonard's slum clearance area, and the dispossessed tenants will have accommodation provided on the Prestonfield housing site. The contrast between the old and the new housing conditions is well illustrated by photographs of St. Leonard's ward and of a model of the lay-out of the Prestonfield housing scheme. The hugeness of the Edinburgh housing problem is brought out by the fact that out of 104,488 inhabited houses there are 7328 single-room habitations and that there are approximately 12,000 houses with rentals below £10 and 22,922 with rentals between £10 and £15. This means that many tenants accustomed to pay small rents have to be induced to pay higher rents. Dr. Robertson emphasises the relationship between an excessive death-rate from tuberculosis and the prevalence of the bad type of house in certain of the wards.

During the year out of 219 deaths caused by epidemic diseases 114 were due to whooping-cough and measles, and here again the new housing methods,

taking the place of old town properties, consisting of 10, 12, or even more houses branching off each common stair, ought to gradually produce a great result. The immunisation scheme against diphtheria makes good progress. There has not been one bad result and in the overwhelming majority of children the injection never causes a moment's discomfort. Among 11,608 children, 7608 of whom were immunised and 4000 of whom were Schick-negative, there occurred 58 cases of diphtheria, but not a single death. During the four years 1924 to 1927 there were 2741 notifications of diphtheria with 242 deaths. Full particulars are given in the report of the circumstances under which the 58 mild cases of diphtheria occurred among the immunised or partially immunised children.

Dr. Robertson expresses his regret that the House of Commons rejected the Edinburgh proposal to enforce the treatment of sufferers from venereal diseases. The patients who ceased treatment before being cured numbered 985 during 1927, giving a percentage of defaulters to the total cases treated of 13·8—somewhat higher than in the previous year. The Scottish Board of Health estimates the percentage of default by the ratio of defaulters to the total cases leaving the centres for any reason and by this method the percentage of default in Edinburgh was 32. Every effort is made to follow up patients, by letters in the case of males and by visits from an almoner in the case of females. The almoners' task is a thankless one as frequently, after several visits, she secures the return of a patient for treatment to be followed again by a subsequent default.

Tribute is paid to the valuable work done by volunteers in connexion with the maternity and child welfare scheme. Dr. Robertson makes special reference to the five childs' gardens which are subsidised by the corporation and to the nurseries, which are provided to enable the mothers to attend the cookery demonstrations. A special investigation of shaving-brushes has shown that such brushes may be infected with a bacillus resembling the bacillus of anthrax. Attention has also been given to improving the technique of the virulence test of the diphtheria bacillus, and it is claimed that an intracutaneous test gives a satisfactory and more rapid result.

The cows stalled in the city number 3732, and during the year 26 were dealt with under the Tuberculosis Order. Of these 15 had tubercle of the udder, 3 tuberculous emaciation, and 8 a chronic cough with other evidence. In 10 cases the udder infection was diagnosed by microscopical examination, and in 5 more by the biological test. In addition to these 26 18 cows came under suspicion as the result of the routine examinations. These animals did not come within the scope of the Tuberculosis Order, but the owners were persuaded to remove them from the dairy herds. The incidence of tuberculosis among the dairy cows of the district, as judged by post-mortem results at the abattoirs, showed no material change when compared with former years; out of 1585 cows slaughtered 43 per cent. were affected with tubercle. The tubercle-free herd of about 50 cows run in connexion with the Royal Victoria Hospital had no reactors at the half-yearly testings. The samples of outside milk examined for tuberculous infection numbered 122, and 7 of these gave a positive result.

Paisley.

Dr. G. V. T. McMichael estimates the houses required at the end of 1927 at 947. The municipal houses sanctioned by the Board of Health number 2010, of which 1306 have been completed and occupied. Despite the encouraging progress made with housing schemes the clamant problem of the slum dwellers, who cannot afford to pay the rents of corporation houses, has not been faced. Dr. McMichael suggests for these two- and three-roomed houses built in three-storied tenement blocks and of the simplest possible character. He definitely opposes the erection of any one-roomed houses, of which there are already too many. It is, in fact, the high proportion of one- and two-roomed houses which makes the domiciliary treatment of the respiratory diseases, including tuberculosis, so difficult in Paisley. During 1927 412 cases of acute primary and influenzal pneumonia were treated in the three hospitals. The case fatality in the fever hospital was 15·6 per cent. and in the Royal Alexandra Infirmary 13·5 per cent.; whilst among the 149 cases treated at home the case mortality was 34·2 per cent. The new probationers at the fever hospital are subjected to the Dick and Schick tests and immunised if necessary.

The Russell Institute, opened in March by H.R.H. Princess Mary, provides in an up-to-date manner for the various municipal health services, including artificial sunlight, X rays, a dental and a remedial exercise clinic. The public has shown an extraordinary interest in the institution and 10,000 people passed through it on the one day when it was opened for inspection. Dr. McMichael is enthusiastic as to the result of light treatment both for rickets and practically all types of surgical tuberculosis, though he is much disappointed at the irregular attendance of the mothers, whose children suffer from rickets. The antenatal work makes good progress and is largely helped by the beds available for antenatal cases at Barshaw Hospital. During 1927 525 mothers attended the antenatal clinics and 206 antenatal cases were admitted to Barshaw Hospital. The total births numbered 1791.

East Ham.

Dr. W. Benton refers to the inadequacy of the isolation hospital. As far back as 1914 this matter was considered and plans were prepared and submitted to the Ministry, but the outbreak of war stopped further progress. In 1922 the Ministry made certain suggestions for temporary improvements and for the preparation of a complete scheme to be carried out in stages as circumstances permitted. Much of the accommodation is of a temporary nature—e.g., military huts. According to the usual standard per 1000 of the population there should be 150 beds, whereas without overcrowding there are only 100. The report shows that at present there is overcrowding to the extent of 40 beds. During 1927 epidemic prevalence of diphtheria and scarlet fever put pressure on the hospital. Over 10 per cent. of the scarlet fever cases admitted were also infected with diphtheria. Scarlet fever antitoxin was used for 20 patients with severe septic and toxic symptoms and, with one exception, the results were highly satisfactory. The persistence of nasal, pharyngeal, and aural complications has given trouble. There is the usual complaint of delay in giving antitoxin for diphtheria. The average duration of illness of 27 fatal cases prior to admission to hospital was four days, and the successful use of antitoxin at this stage is hopeless. Towards the end of the year diphtheria assumed an unusually septic and toxic type. Of the 30 fatal cases of diphtheria 23 of the deaths occurred under 8 years of age. Six members of the staff contracted diphtheria and two scarlet fever. Prophylactic immunisation has not yet been adopted.

The staff of health visitors has been brought up to the level of five years ago by the belated filling of a vacancy, but Dr. Benton points out that a further increase of staff is needed in order to cope with the supervision of the pre-school child. He summarises the needs of East Ham children as follows: (1) A more intensive health campaign with regard to the pre-school child (already good work is being done for these children at the aural, dental, and ophthalmic clinics). (2) Practical and interesting instruction in hygiene in the elementary schools. (3) The erection of a day open-air school to accommodate 500 children. (4) The provision of a special school to accommodate 200 physically defective children. (5) The improvement of home conditions, especially in the direction of reducing overcrowding.

Coventry.

Dr. E. H. Snell mentions that during the latter half of the year there were two sharp outbreaks of diphtheria, each associated with a large school. In a

special report in September he recommended his committee to consider the question of providing immunisation facilities, and the consideration of the report was deferred until the medical staff had been strengthened by the appointment of an assistant medical officer of health. There were 14 notifications of encephalitis lethargica and seven deaths attributed to it. During the last nine years there have been 130 notifications and 56 deaths from this disease. The antenatal clinic is conducted by a gynæcologist, Dr. S. A. Ballantyne. Of the 265 cases seen 160 were maternity cases booked for the Coventry and Warwickshire Hospital and 45 booked for the Gulson-road (poor-law) hospital. Of the remainder 43 were sent by midwives, 10 came of their own accord, and 7 were not pregnant. The total births numbered 2065. The Council paid £1201 for maternity cases sent to the two hospitals mentioned and received back in contributions £696 16s. 6d. The chief health visitor, Miss Barratt, has been appointed infant protection visitor by the Coventry guardians. It has again been impossible to operate the sections of the Housing Acts relating to the closure of unfit houses, owing to the absence of alternative accommodation. In referring to the close association of the school medical and infant welfare services Dr. Snell emphasises the desirability of providing some leisure for the medical members of the staff to engage in research. The open-air residential school, situated on high ground about five miles from the city, has been rebuilt to accommodate 90 children, and was officially opened by the mayor in July. The day-open-air school held on part of the roof of the Centaur-road school was much interfered with by the wet weather of 1927.

Halifax.

Dr. Cyril Banks says the issue of his report has been delayed owing to the full energy of the health department having been concentrated on the suppression of small-pox. During the year 1927 there were "three invasions" of the town by small-pox, amounting in all to 12 cases with no deaths. For the first time since 1921 the Registrar-General has estimated a slight increase in the population. The death-rate was higher than usual owing to a sharp outbreak of influenza in February and March. The deaths attributed to influenza numbered 65. The infant mortality-rate was 11 higher than in the previous year, and Dr. Banks discusses the reasons for the high neonatal and maternal mortalities from childbirth. Dr. Banks considers that the difficulty with regard to smoke from domestic chimneys need no longer exist. From his experience "Coalite" produces bright, clean, hot fires with no smoke, no dirty kettles and pans, and no need for the chimney sweep. The orthopædic scheme under the direction of Mr. F. W. Goyder, F.R.C.S., has done excellent work. Of the 44 cases under the school age treated 34 were rickets. Of the 222 of school age 62 were cases of flat-foot, 56 of stoop, 32 of lateral curvature, 11 of infantile paralysis, 11 of rickets, 6 of infantile hemiplegia, 5 of torticollis, and 4 of Erb's paralysis. Mr. Goyder points out that the staff of the clinic needs to be increased and that another masseuse should divide her time between the clinic, the schools, and the maternity and child welfare centre. In order to help the work a lamp for ultra-violet radiation has been installed at the Northgate centre.

Great Yarmouth.

Dr. A. N. Stevens draws attention to the fact that 50 per cent. of the deaths in the town during the year under review occurred at ages over 65, and 32 per cent. at ages over 75. The total rainfall was 31·96 in. and the hours of bright sunshine 1513·7. In discussing the work of the tuberculosis dispensary Dr. Stevens refers to the difficulty of getting contacts to submit themselves for examination. The notifications in 1927 numbered 133 and the average for the preceding five years was 87, but the number of contacts examined during 1927 was only 21. There are still 24 wells in the borough, many of which "are without doubt liable to pollution at times," but Dr. Stevens thinks that "unless the samples for analysis happen to be taken at one of such times" these wells cannot be dealt with. The new houses erected numbered 348 of which 276 received State assistance. Under the new milk regulations general shopkeepers are only to be permitted to sell milk in sealed bottles.

Dover.

Dr. A. B. McMaster records a severe epidemic of influenza in the first quarter of the year. At the end of 1927, after revision, the tuberculosis register contained 356 pulmonary and 99 non-pulmonary cases, the two sexes being in about equal proportions. The tuberculosis notifications numbered 91 and the deaths 51, so that the names on the register are five times the notifications for the year and nine times the deaths. Since the new scarlet fever antitoxin came into use at the isolation hospital (in 1926) the number of complications and the duration of stay at the hospital have been reduced. Dr. McMaster points out that the number of cases is too small to draw general conclusions from, but that the facts are suggestive of the value of the new antitoxin. The senior sanitary inspector attended the "clean milk" course at Wye Agricultural College. Greater use is being made of the hospital beds provided at the Royal Victoria Hospital for complicated maternity cases.

MENTAL HOSPITAL REPORTS.

THE annual report of the *City of Birmingham* Asylums Committee is of particular interest this year, as it opens with a report, from the chief medical officer, of the medical work in both institutions. The principal feature is an inquiry into the ravages of physical disease, particularly focal sepsis, among mental patients. Oral sepsis was found in 77 per cent. of the 531 cases admitted, and many of the remaining 23 per cent. were edentulous, so that a really healthy mouth was rare. The commonest type of septic mouth was gross suppurating peri-odontitis. Septic conditions of the ears, throat and air passages were found in half the patients, and 161 out of 180 examined revealed evidence of infection in one or more sinuses, while 40 had chronic suppurative inflammation of the ear. Operations by the laryngologist numbered 174, and no patient appeared to be worse after them, physically or mentally, while improvement followed by discharge was often recorded. Apart from the general toxic effect of these conditions, it is possible that infection passes directly to the brain from the nose and throat; certain work on two cases of advanced epilepsy and mental disorder has pointed to direct invasion of the cranial cavity through diseased bone. The gynæcologist has also played his part in the detection of sepsis, and has found T.A.B. vaccine useful for many resistant cases of septic cervicitis. A review of the ætiological rôle of influenza in mental disturbance suggests strongly that the virus plays a large part, both immediately and after a delay of several months.

After this interesting medical summary the reports of the two mental hospitals seem more than usually statistical. At *Winson Green* there were 763 patients at the end of the year. The recovery-rate was 41·4 per cent., with an additional "discharged relieved" rate of 11·1 per cent. More than half the patients admitted during the year were totally discharged, 68 of them after a preliminary month's trial. The death-rate of 6·45 per cent. is the lowest in the history of the hospital. Autopsy was performed in 84 per cent. of possible cases. The extensive parole allowed resulted in 12 escapes, but the superintendent regards the liberty as "well worth it." All were safely returned. The general health was very good and only two patients were under treatment for tuberculosis at the end of the year. A number of operations for septic foci were performed and most of them were followed by improvement, either directly or after a subsequent treatment by protein shock (T.A.B. vaccine). Nearly 100 patients received

shock therapy, and in some cases their mental trouble was cut short by this means. Eight cases of general paralysis were treated by induced malaria; 3 were discharged "recovered," and 2 others improved. 65·5 per cent. of patients were usefully employed, the majority in the grounds, laundry, kitchen, and sewing-room. Electric light is to be installed throughout the building. There is some difficulty in keeping the number of female nurses up to establishment.

At *Rubery Hill and Hollymoor Mental Hospital* there were 1815 patients at the end of the year, including 146 epileptics. Of the admissions during 1927 nearly 15 per cent. were cases of general paralysis in an advanced and debilitated condition. The recovery-rate of 48·1 per cent. is therefore all the more encouraging. Over 64 per cent. of all cases admitted were totally discharged. The completion of a special treatment block, including an operating theatre and electrical and hydrotherapy rooms, has provided a most valuable adjunct to the care of the patients. Two bungalows are used as convalescent wards for women and a third will be available when a nurses' home is built. The general health of the patients was good, and only three cases of tuberculosis were under treatment at the end of the year. There was no typhoid fever; this may be partly due to the liberal use made of T.A.B. vaccine as a means of inducing protein shock. A routine test for intestinal organisms on admission showed that 25 per cent. of patients had had at some time a more or less severe intestinal infection. Some of these become carriers and originate outbreaks of dysentery or colitis in the institution. The medical superintendent makes the interesting observation that the deeper problems of mental disorder are also those of rheumatism and rheumatic disorder—states of low grade and chronic infectivity. The hydrotherapeutic department has therefore been augmented by four tables for continuous colon irrigation and two mercury-vapour lamps. The malarial treatment of general paralysis has been largely superseded by other forms of induced pyrexia, especially non-specific protein therapy. To the stress laid on removal of focal sepsis the Visiting Commissioners attribute the striking absence of noise and unrest among the patients; the removal of somatic irritation takes the place of sedatives. Parole on and off the estate is granted to over 200 patients, and most of those discharged are previously sent out on trial. Nearly 1000 patients are employed at trades or on the estate. Twenty-three male and 12 female nurses have passed the final examination for the M.P.A. certificate, 5 with distinction.

The *City of Cardiff Mental Hospital*, like the hospitals of Birmingham, publishes its statistics in the body of the medical superintendent's report, so that the discussion of them is almost swamped by the tables. There were 660 patients on the books at the end of last March. Twelve and a half per cent. of the patients admitted were suffering from general paralysis. The death-rate was 11·8 per cent. and the recovery-rate 41·2 per cent. The general health was good and there were only five cases of tuberculosis, two of erysipelas, and one of scarlet fever. Autopsies were held in all cases where permission was given. The dental surgeon made 540 examinations; the gynæcologist made 63, and the laryngologist 142. Research work has been continued on the distribution of nitrogenous compounds in the plasma and cerebro-spinal fluid, on cholesterol and glucose in the blood, and on the radiography of the alimentary tract. A series of films has been prepared showing characteristic motor manifestations in mental disorder. Two electrically heated ovens and a boiling table have been installed to replace gas-cooking apparatus. The dietary has been improved. Among recent additions to the equipment of the hospital is a fine bowling green. Limited parole is given to 20 patients. Twenty-three men and 30 women nurses are certified or registered.

The *Brighton County Borough Mental Hospital* at *Haywards Heath* had 847 patients resident at the end of the year and showed a recovery-rate of 39·37 and a death-rate of 8·6 per cent. There was a small epidemic of influenza in the spring, but no dysentery. Eighteen patients have tuberculosis. Over 50 patients have had full parole daily and another 50 have had parole in the grounds. Over 100 patients, mostly women, have attended weekly classes for country dancing and have benefited considerably. The women patients have formed a debating society; from their deliberations several suggestions for their comfort have arisen and many have been approved. Except in one ward all the women now have their own clothes, marked with their names, and they appreciate this very much. Twenty patients have been home for week-ends and eight men went home for Christmas. Over 50 have been allowed to visit Brighton, Eastbourne, and London for the day on parole; there has never been any trouble about return to hospital. Six wards have open doors. The Guardianship Society has given invaluable aid to discharged patients, finding them homes and employment. The out-patient clinic in Brighton has now treated 192 patients, only 12 of whom have had to be certified. The dental surgeon treated 690 patients during the year and extracted 694 teeth. Stress is laid on open-air treatment at this hospital. A cinema is being erected and a stable is being turned into a laboratory, while plans are being made for an admission hospital, which will meet the immediate threat of overcrowding. Sixty-five nurses are certificated or registered.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 1ST, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 102 (last week, 141); scarlet fever, 1376; diphtheria, 851; enteric fever 122; (last week, 153); pneumonia, 508; puerperal fever, 32; puerperal pyrexia, 89; cerebro-spinal fever, 4; acute poliomyelitis, 6; acute polio-encephalitis, 4; encephalitis lethargica, 27; continued fever, 2; dysentery, 6; ophthalmia neonatorum, 92. No case of cholera, plague, or typhus fever was notified during the week.

The following counties each notified 3 or more cases of enteric fever: London, 17; Berks, 3; Chester, 3; Devon, 4; Essex, 23 (of which Colchester 15); Huntingdon, 7 (of which St. Ives, U. and R. 6); Lancaster, 9; Middlesex, 7; Norfolk, 3; Sussex East, 3; Monmouth, 4; The total of 122 includes 42 cases of paratyphoid fever, of which 13 were notified in London and 6 in Huntingdonshire.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on Sept. 4th and 5th was as follows: Small-pox under treatment, 7; scarlet fever, 1477; diphtheria, 1472; enteric fever, 112; measles, 118; whooping-cough, 244; puerperal fever, 14 (plus 7 babies); encephalitis lethargica, 71; poliomyelitis, 1; "other diseases" 20. At St. Margaret's Hospital there were 14 babies (plus 5 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns including London there was no death from small-pox, 6 (1) from enteric fever, 9 (0) from measles, 5 (5) from scarlet fever, 27 (3) from whooping-cough, 15 (1) from diphtheria, 86 (23) from diarrhœa and enteritis under two years, and 20 (4) from influenza. The figures in parentheses are those for London itself.

The fatal cases of enteric fever outside London were reported from Southend-on-Sea 2, Bolton, Manchester, and Salford, 1 each. Of the 9 fatal cases of measles, 2 each were reported from Wolverhampton, Liverpool, and Cardiff. There was no fatal case of scarlet fever outside London. Of the 24 fatal cases of whooping-cough outside London, 3 each were reported from Willesden and Leeds, while Glasgow reported 6 for the same week. Liverpool again reported 9 deaths from diarrhœa, Birmingham and Manchester 5 each, and Hull 4, while Glasgow and Dublin reported 6 and 8 respectively.

The number of stillbirths registered during the week was 250 in the great towns (corresponding to a rate of 36 per 1000 births), including 53 in London.

Reviews and Notices of Books.

THE OPIUM PROBLEM.

By CHARLES E. TERRY, M.D., and MILDRED PELLENS. New York: The Committee on Drug Addictions. 1928. Pp. 1042.

THIS work, though formidable in its dimension, is stated to be condensed from a report prepared under the direction of the Committee on Drug Addictions of New York, in collaboration with the Bureau of Social Hygiene. It presents a review of the literature of the Narcotic Drug Problem, drawn largely, but by no means exclusively, from American sources. It deals with the extent, development, ætiology, nature, pathology, symptomatology, and treatment of drug addiction, and finally discusses efforts at control of the commerce in opium and other narcotics, municipally, nationally, and internationally.

The probability that the Geneva Opium Convention of 1925, which implements The Hague Convention of 1912, will shortly come into operation, makes the appearance of this work opportune. By a review of standard works, treatises, and monographs, by questionaires directed to medical and administrative authorities, and by a digest of conventions, laws, and regulations, the authors have endeavoured to furnish students of the opium question with a "fairly composite picture of professional and official opinion and attitude of the day as to the medical and sociologic aspects of the problem." The authors are not prepared to confirm the assertion that the number of addicts in the United States exceeds a million, but are satisfied that their "surveys and estimates indicate sufficiently clearly the existence of a major medico-social problem" to be confronted. The early use of opium as an anodyne in Asia, its introduction into Western countries, and the discovery of its value for other than therapeutic purposes, the spread of the use of the hypodermic syringe, and the differentiation of the pharmacological properties of the alkaloids derived from opium are related. The view is expressed "that there are certain persons who, by reason of definite psychical characteristics, more readily become victims of the chronic use of the drugs"; but while discussing various attempts to elucidate the ætiology of narcotic addiction, the authors are not satisfied that a truly scientific explanation has yet been vouchsafed, and urge the need of further research into "the mechanism of the phenomena recorded." In a later chapter, however, the conclusion is reached that "there is no type which may be called the habitual user of opium," and that addiction is "not restricted to any social, economic, mental, or other group." In regard to treatment, the relative advantages of complete and partial withdrawal of the drug are stated, but the conclusion is arrived at "from the material reviewed that the treatment of this condition has not emerged from the state of empiricism."

Efforts at control of the foreign commerce in opium were made by the United States as early as the thirties and forties of last century, more especially in regard to China, Siam, and Japan. It was, however, after the acquisition of the Philippine Islands by the United States that American attention was more particularly directed to control of narcotic traffic in the Far East. Bishop Brent, who had become aware of the abuse of opium by the Philippinos, in 1906 urged President Roosevelt to international action, and this resulted in the Shanghai Commission of 1909. That Commission, to which representatives of America, Great Britain, Austro-Hungary, Germany, France, Italy, China, Japan, the Netherlands, Persia, Portugal, Russia, and Siam were invited, recognised the sincerity of China in grappling with the opium trade, the need for suppressing the smoking of opium, the necessity for controlling the manufacture and distribution of morphine and other drugs also liable to abuse, and, above all, that the question was not one for the Far East alone, but that the Occident as well as the Orient was suffering from the abuse of narcotics, and that any real control of the commerce in these dangerous drugs must be international and, indeed, world-wide. The United States followed up the report of the Shanghai Commission by inviting an international conference at The Hague to conventionalise the findings of the Commission. This Conference, after some demur by the British Government arising from their recent agreement with China to terminate the Indo-Chinese opium trade, met at The Hague in 1911–12, and further conferences were held there in 1913 and 1914. The International Opium Convention of 1912 marked not only a new departure in international effort, but bound its contracting parties to the introduction of legislation to give effect to its provisions. The Convention sought to regulate the production and distribution of raw opium, to suppress the use of opium "prepared" for smoking, and to limit the manufacture, sale, use, import, and export of morphine, heroin, and cocaine to "medical and legitimate purposes." Twelve powers only had taken part in the first Hague Conference, but by 1913 some 46 had signed it, and ratification was proceeding. The intervention of the Great War paralysed the progress of international coöperation from 1914 to 1918, but the Peace Treaties of 1919 secured the adhesion of Powers which had previously refused ratification. Great Britain, by the Dangerous Drugs Act of 1920 and 1923, gave legislative effect to The Hague Convention as regards the Mother Country. By an Act of 1914, known as the Harrison Narcotic Act, amended in 1918, 1926, and 1927, the United States put The Hague Convention into operation within its borders, and by the Jones-Miller Act of 1922 restricted foreign trade in narcotics. By the Covenant of the League of Nations, the supervision and execution of agreements in regard to the traffic in dangerous drugs was entrusted to the League. The story of the action of the Council and Assembly of the League and of its Advisory Opium Committee is related, and also that of the prolonged and contentious opium conferences at Geneva in 1922–23, which resulted in a fresh agreement among Powers with possession in the Far East, and a new Convention reproducing and supplementing The Hague Convention to which all States could adhere. It is this last instrument which will come into force on Sept. 25th, and although the United States and Chinese representatives withdrew from the Conference and are no parties to the Convention, it should, through the Central Board it sets up, increase the control of the traffic and reduce the scandalous amount of illicit trade.

This compendious work of Dr. C. E. Terry and Miss Pellens will prove a timely and serviceable aid to students of the opium problem and of the tangled story of efforts after international control of traffic in dangerous drugs.

RECENT ADVANCES IN SURGERY.

By W. HENEAGE OGILVIE, M.D., M.A., M.Ch. Oxf., F.R.C.S. Eng. Assistant Surgeon, Guy's Hospital, and Lecturer in Clinical Surgery to Guy's Hospital Medical School; Surgeon to Out-patients, Hampstead General and North-West London Hospital. London: J. and A. Churchill. 1928. Pp. 461. 15s.

THE success of "Recent Advances in Medicine," the first number of the series to which the present volume belongs, has encouraged the publishers in the production of several books which are widely read and admired. The surgical volume, which might reasonably have been the second volume to appear, actually comes no higher than tenth in the list, and has been eagerly anticipated. It is well worth waiting for. The burden of its preparation has fallen chiefly on the author whose name appears on the title page, but he has been ably assisted by some of his colleagues. The chapters on cancer, plastic surgery, chest surgery, and venereal disease have been written respectively by Mr. J. F. Carter Braine, Mr. T. P. Kilner, Mr. Grant Massie, and Mr. V. E. Lloyd, all of whom

maintain a high standard of achievement. In his preface Mr. Ogilive states that the difficulty which confronted him was to decide what recent surgery is and what constitutes an advance. Advance in surgery is not commonly a thing of sudden birth and it must be rare indeed to find that the conception of a new method is followed rapidly by its evolution in a practical and useful form; this is usually a process lasting many years. In spite of obvious difficulties, however, the author has succeeded in writing a clear, concise, and systematic account of the latest work in all branches of surgery. The magnitude of his task may be estimated by the references to recent surgical literature at the end of each chapter. These references should be of very great value to the busy surgeon who wishes to consult a small number of modern papers on any aspect of his subject. Much of the best surgical literature of the last few years is quoted here. One of the most interesting chapters is that on plastic surgery. The impetus given to this branch of surgery by the war makes it obviously a recent advance; its importance has hardly diminished in peace time and is not likely to diminish while modern machinery and motor-cars continue their devastating progress. In the section on the toxæmia of acute intestinal obstruction the use of bile as a therapeutic measure is not mentioned, perhaps because it has hardly yet emerged from the purely experimental stage. There is one serious blemish for which the author may not be entirely responsible—the frequency with which the reader is told that a full description of some test, with a distinct surgical application, is to be found in the companion volume on Medicine. There are some omissions which spoil the symmetry of the sections in which they occur. It is clear that the object is to save space by avoiding repetition and not to advertise a book which is far too popular to need such assistance, but a certain amount of overlapping is preferable to the need for simultaneous consultation of two volumes. We trust that in the next edition Mr. Ogilvie will supply these few pages which will make his excellent book complete by itself.

LATENT TUBERCULOSIS.

La tuberculose pulmonaire latente. By Prof. J. RIEUX. Paris: Gaston and Co. Pp. 247 and plates. Fr.27.

THE author has written this book out of the rich fullness of 35 years' experience as Médicin-Inspecteur of the French Army. During this long period he has had ample opportunity of studying the question of latent tuberculosis in the young adult male population of France as it passes into the ranks of the Army. Many terms have been devised to express this condition in French military parlance—"prétuberculose, imminence tuberculose, bronchite suspecte, bronchite de sommets, sclérose de sommets"—but the author rejects them all as unsatisfactory and adheres to the term of latent tuberculosis. He lays down certain conditions for the definition. The lesion should be manifest and accessible to investigation, its tuberculous nature should be proved, but the stage of its evolution should not be capable of recognition. Prof. Rieux devotes six chapters to an exposition of his subject, including symptomatology, radiology, and clinical pathology. At the end of the volume a number of illustrative cases are cited and a collection of radiograms, which last appear to have suffered a little in the process of reproduction. No strikingly new work is described—there is, indeed, none to describe—but the book is comprehensively written and forms a lucid presentation of the subject.

RULES FOR RECOVERY FROM PULMONARY TUBERCULOSIS.

Fifth edition, thoroughly revised. By LAWRASON BROWN, M.D. Philadelphia and New York: Lea and Febiger. 1928. Pp. 244. $1.50.

DR. LAWRASON BROWN believes that in pulmonary tuberculosis the physician must not only be prepared to do what is right himself, but also to make the patient, the attendants, and externals coöperate. The well-tried book before us is therefore intended to supplement the care of the physician which can only carry the phthisical patient a short distance on the way to recovery. The physician of to-day must, the author recognises, *teach* in order to serve most intelligently, and his own teaching in this little book has saved countless lives of a type which are peculiarly worth saving. Not dramatically, as a surgeon saves lives, but with precept upon precept, line upon line, chosen for effect. The book is not intended for skimming but to be gone over chapter by chapter day by day, for, as the author remarks, with increasing knowledge new and important facts may be discovered in many of its paragraphs. The present edition lacks the illustrations of the earlier editions, but the reader is referred to the *Journal of the Outdoor Life*, where they may be found.

THE SURGERY OF THE SKIN.

Chirurgie der Haut und des Unterhautzellgewebes. By Dr. F. R. ASCHER. Being an instalment of *Die Chirurgie*, by Prof. Dr. M. Kirschner and Prof. Dr. O. Nordmann. Berlin and Vienna: Urban and Schwarzenberg. 1928. With 46 illustrations and 29 coloured plates. Pp. 263. M.22.

THIS production on the surgery of the skin and subcutaneous tissues forms a small part of a new text-book on surgery, both general and special, by numerous writers. It cannot be purchased separately. After a short historical and anatomical introduction, the subjects discussed include nævi and other congenital conditions, such as v. Recklinghausen's disease, the various types of skin wounds, including gunshot and caustic wounds, and dog-bites, with the lines of treatment specified. Damage of the skin by heat, light, and X rays, electricity, lightening, and radium are next considered, and then follow the surgical aspects of furunculosis, erysipelas, tuberculosis, actinomycosis, anthrax, &c. The circulatory disturbances of the Raynaud type, gangrene, erythromelagia, and ulcers of the leg are fully discussed, and also neoplasms, benign and malignant. The volume has been written by a surgeon for surgeons, and with such a title should, we think, contain a chapter on the plastic surgery of the skin and the modern methods of skin-grafting.

In other respects the work is satisfying. The style is simple and succinct, and the publishers have been generous with a number of excellent illustrations.

HEALTH AND CLEANLINESS.

By W. A. MUIR, M.D., D.P.H., Medical Officer of Health for Gillingham, Kent; and GEORGE H. GREEN, B.Sc., B.Litt., M.A., Ph.D., Lecturer in Education, University of Wales. London: The Health and Cleanliness Council. 1928. Pp. 63. Gratis.

THIS little text-book for teachers is still a further manifestation of the remarkable activity of the Health and Cleanliness Council, which seems to suffer from no shortage of funds for the free issue of educational material. After a brief foreword by Dr. George F. Buchan, M.O.H. of Willesden, and a concise introduction, it deals in nine lessons with the teaching of children about cleanliness of the person, of the home (especially the kitchen), of food, of personal and bed-clothing, and about the special problems of cleanliness while in camp or at picnics. The book is illustrated with reproductions of the now well-known posters of the Council, and is a model of its kind. How valuable this cleanliness propaganda would have been 50 or 100 years ago, when the dirt-diseases were really a serious menace! There is just a little danger now that too much stress on this one aspect of public health education may create an ill-balanced conception of the whole problem in the child-mind.

AIDS TO EMBRYOLOGY.

By RICHARD H. HUNTER, M.D., M.Ch., Lecturer in Anatomy, Queen's University, Belfast. London: Baillière, Tindall and Cox. 1928. Pp. 160. 3*s*. 6*d*.

THIS little book contains a good deal of information, given, of course, in a much abbreviated form. We do not believe in the utility, for the student of medicine, of accounts of development shorn of their details, so that, from this point of view, we consider the chapters which deal with general theories to be the best in the book; but for students who merely look on embryology as an examination necessity this little work will prove an admirable aid. It is only fair to say, however, that in some matters Dr. Hunter does not adopt the descriptions of parts undergoing development which are usually found in most English textbooks.

PERCIVAL'S MEDICAL ETHICS.

Baltimore: The Williams and Wilkins Company. 1927. Pp. 291. 13*s*. 6*d*.

Thomas Percival was born in Warrington in 1740, and entered the University of Edinburgh at what was then the rather advanced age of 21. From boyhood he had been a student and when he settled in practice in Manchester he became associated with the founding of the Manchester Literary and Philosophical Society, a distinguished body which fostered among others Dalton and Joule. Percival must have been a man of striking personal characteristics, for he was elected a Fellow of the Royal Society before he had made any public mark, and even in the eighteenth century, when the favours of private interest were bestowed with particular cynicism, his election seems to have caused surprise. However, in this event it was justified, for his public work in Manchester, where he lived all his life, led to the formation of proper sanitary standards in the city, and laid the foundation for factory legislation in the whole country. His work on medical ethics, which has now been edited by Prof. Chauncey D. Leake, the well-known pharmacologist of Wisconsin, was written for the guidance of his son, a medical student. It is entitled "A Code of Institutes and Precepts Adapted to the Professional Conduct of Physicians and Surgeons," and it was very thorough in its scope, taking regard of the medical position in hospitals, in private practice, and also in public situations—indeed, in its inception it was a work of medical jurisprudence. It may be thoroughly recommended for perusal by those who wish to understand what were in the eighteenth century the essential matters to be regarded for the formation of proper relations between medicine and the public, and it is interesting to note that in the twentieth century the main lessons are perfectly apposite, though in detail so many circumstances have changed. Both the editor and the publishers are to be thanked for an interesting volume. The London agents for the publication are Messrs. Baillière, Tindall and Cox.

THE YOUNG MAN AND MEDICINE.

By LLEWELLYS F. BARKER, M.D., LL.D., The Macmillan Company. 1928. Pp. 202. 10*s*. 6*d*.

Dr. Barker is Professor Emeritus of Medicine in Johns Hopkins University, New York, and it is, consequently, out of large experience that he addresses his book "to the young men in medicine with whom I have had the privilege of association in Canada and in the United States." His purpose, in the first instance, has been to help those who have not reached any final decision as to what they want to do in life. The question is one which he thinks should be decided by themselves, but for this purpose guidance should be supplied out of the experience of leaders in various professions and callings. This small book is one of a series, termed the "Vocational Series," in which, for the information of the young man, the various things which he has to consider before deciding to be a lawyer, a clergyman, a doctor, a journalist, and the rest, are set out. The medical track is well charted, though some of the advice given is more suitable to one who is on the journey than one who has not yet made up his mind to start.

New Inventions.

THE LA FORCE GUILLOTINE.

IT is now nearly 12 months since an American visitor demonstrated the La Force guillotine to me. I have used the instrument many times and feel that its employment should be much more general in this country. As far as I know it is rarely used. The instrument is built on the pattern of the Ballenger guillotine, but with two sliding parts, the upper (or outer, when considered as in use on the tonsil) which is slightly roughened and clamps the tissue between tonsillar capsule and constrictor muscle, and the inner or cutting blade. Both are worked from a scissor or forceps handle as in the Ballenger pattern, but in addition a screw attachment allows the crushing blade (A) to be more firmly sent home and fixed for any desired time in this position; also another screw moves the cutting blade (B). In use, under general and complete anæsthesia to produce relaxation, the tonsil is engaged and dealt with as in any other enucleation operation with the guillotine, but after the crushing or hæmostatic blade has reached the bottom of the fenestrum it is still more firmly forced down and held in position by the screw. The cutting blade is then forced down by turning the second screw and withdrawn by reverse action of this screw, and the tonsil now freed from its bed lifted out with suitable forceps, such as Luc's, or with a sponge-holder. The hæmostatic blade is allowed to remain on for five minutes or more, when it is released by unscrewing, and the guillotine removed. In favourable cases there will be no bleeding at all, or at most only a slight tinging of the mucus in the pharynx; in the majority of cases there has been no need to use a single swab. There is singularly little pain or discomfort in the 48 hours following operation and in this, the method contrasts very favourably with other guillotine enucleations or with dissection. The instrument is not so easy to use as the O'Malley, and a slightly larger percentage of failures to enucleate the tonsil cleanly will result. I have no hesitation in stating that when successful the method is ideal, but like all others the La Force occasionally fails.

The instrument is made by Messrs. Mayer and Phelps, New Cavendish-street, London.

LINDLEY SEWELL, M.B., B.S. Lond.

THE LANCET.

LONDON: SATURDAY, SEPTEMBER 15, 1928.

EPILEPSY AS A SOCIAL PROBLEM.

ALTHOUGH there are probably few diseases which have been recognised for a longer time and about which more has been written than epilepsy, it has to be admitted that as a social problem it has hitherto received comparatively little, and certainly quite inadequate, consideration. For this reason the two articles which we publish in the present number, the one (p. 568) on the results of a census made in Surrey and the other (p. 545) on the subsequent history of a number of children who have passed through a residential school, are worthy of careful attention. To those who are unaware how scanty are our statistics of disease which does not concern the sanitary or the burying authorities it may come as a surprise to learn that there are no reliable figures as to the incidence of epilepsy. Moreover, in view of the wide differences in the frequency of attacks, the great variations in type and severity which undoubtedly result in many cases being unrecognised, and the fact that epileptic attacks not uncommonly occur as a complication or symptom of some even graver and more urgent condition, it may safely be said that it would be impossible to obtain any complete and reliable statistics regarding the incidence of the disease. The Permanent Committee on Epileptics did not attempt the impossible. They limited their census to a definite area—namely, the county of Surrey—and to such persons as were chargeable to public authorities. They found that in the area examined the proportion of such epileptics amounted to 0·65 per 1000 of the general population, and, if this may be accepted as a fair sample of the country as a whole, they estimate that in England and Wales there are 25,000 persons affected by this disease who are a public charge. Of this number rather more than one-third—again judging from Surrey experience—are mentally normal, whilst the remainder are either insane or mentally defective. It is clear, therefore, that from the point of view of incidence alone the problem of the rate-supported epileptic is a serious one. It becomes the more so in view of the facts ascertained by the Committee that one-quarter of the total number of educable epileptic children are attending no school or institution, and that of those who come within the scope of, and should be dealt with under, the Mental Deficiency Acts, less than one-fifth are in fact so dealt with.

No doubt when epilepsy is complicated by, or has induced, serious mental defect or deterioration there is little likelihood of the sufferer being rendered economically useful; but there are many young mentally normal epileptics who drift into chronic unemployability for want of proper education and training, and there is every reason to believe that the absence of such care is also an important factor in bringing about mental deterioration in a number of cases. Dr. J. TYLOR FOX, medical superintendent of Lingfield Epileptic Colony, in his account of the after-history of 332 children who passed through the colony in a period of eight years, shows the benefits which may result from training in a suitable residential school. Although the children admitted to Lingfield are a worse than average group, inasmuch as they suffer from attacks which are too severe to allow of them attending ordinary schools, their subsequent history shows that 28 per cent. of the total have become partly or entirely self-supporting. When the unpromising nature of the raw material is borne in mind this result must be considered as very satisfactory and as demonstrating the value of the treatment and training received. Unfortunately, the accommodation at present existing for cases of this kind is so inadequate that these advantages are only available for a relatively small number. Dr. FOX estimates that the proportion of "educable" epileptic children who are accommodated in residential special schools is only about one-fifth of the total in existence, the remainder either drift into poor-law or other institutions or they are allowed to remain at home. In any event it may safely be said that the great majority of them receive little if anything in the nature of skilled treatment and training. In addition to this, as we have already mentioned, the accommodation available for those in whom the epilepsy is accompanied by mental defect is equally unsatisfactory. A careful study of the facts presented points conclusively to the serious nature of the problem, and to the utter inadequacy of the existing accommodation for the epileptic, whether mentally normal or abnormal. It may be that some of these matters will be dealt with by the Board of Education Committee on Mental Deficiency now sitting, whose report, we understand, will be published before the end of the year. It may also be that some attention will be given to the problem in the alterations to the poor-law system which are imminent. In any case, however, it cannot be doubted that epilepsy constitutes an important social problem, and that the time has arrived when it should receive serious consideration from this aspect.

THE FALLING BIRTH-RATE.

THE birth-rate for 1927 turns out to have been the lowest recorded in this country since the establishment of civil registration, and responsible citizens hold up their hands in horror, wondering what the young people are coming to. A sane view of the situation suggests that there is nothing to be horrified at except the spectacle of human beings responding to their environment in the same way as any other live thing, animal or plant. Large and increasing populations have been welcome in the past for two reasons. In the first place, they provided larger armies—a consideration which was perhaps natural in Old Testament times and was artificially flogged into prominence in Europe as late as the nineteenth century; it has now, we hope, gone for good. And in the second place, rulers and governors realised that large numbers are more likely than small ones to comprise those extreme variants in qualities of body, mind, and spirit on which leadership depends so much. We have, too, in the last 150 years become so accustomed to seeing the population of this country progressively growing larger and larger, and to hearing continually that there is a shortage of houses that we find it difficult to realise the possibility—indeed, as far as can be foreseen, the certainty—that our numbers will very soon cease to increase and that the population will return to the stationary position which it had, at a much lower absolute level, in the sixteenth and seventeenth centuries. Even the town-planner and the speculative builder do not seem to have appreciated the position.

If people really believed in evolution, they would have more constantly in mind the thought that man

is the product of his ancestry and that he is likely in matters of large temporal importance to behave in ways analogous to theirs. The numbers of any animal or plant which are alive in any given area at any moment are the maximum which conditions allow. Breeding is actually or potentially profuse enough to keep the place as full of a particular species as it will hold; with plants it is generally a question of space, with animals of food. And so long as conditions remain unaltered this optimum population persists at the level which allows the greatest number of individuals to exist at a fairly high level of perfection; natural populations of animals and plants do not consist of starvelings but of individuals which are well grown, healthy, and reproductive. There is, in short, no striking evidence in the survivors that there is any injurious overcrowding. But if conditions alter, the optimum population changes too; the dandelion and other weeds of bare soil exist on the minor catastrophes of the earth's surface and the rat population varies directly with the available food-supply. Man needs space and, being animal, especially food, and under any given set of conditions he multiplies till the number of human beings is the largest which can obtain the return from life which they are prepared to accept as adequate. In comparison with smaller animals he reproduces slowly, but given time he will fill up any conditions in which he finds himself. He differs, of course, from animals in that he can to some extent make his own environment—though animals are not wholly without that capacity—and to that extent he can control his own optimum population. It is here apparently that anthropoid apes fall short. With, at any rate in the orang and gorilla, exceptional physical powers they lack the mentality to alter the circumstances of their life in such a way that they can be numerous. They are, in fact, all sparse; it was, we think, Sir HARRY JOHNSTON who estimated that there were not more than 10,000 chimpanzees in equatorial Africa and the larger ones are fewer still. We may guess that early man was hardly abundant by modern standards; conditions of life must have been very hard, and it was perhaps just a lucky chance that enabled him to multiply enough to reach the stage where by numbers and herd action he could have the mastery over other beasts. And it is most interesting to note, as Prof. CARR-SAUNDERS has pointed out, how primitive man always regulates his numbers to the available food; profuse procreation seems to have come in with the Christian era and among savages the production of children is, as a rule, severely restrained, partly by rules and customs, partly by a sheer lack of fertility to which attention has often been drawn lately in the South Sea Islanders. As man's control over his circumstances developed and increased, so larger populations became possible and where and when possible they were automatically achieved. The flood of new people which flowed in this country all through the nineteenth century was the product of the changes known as the industrial revolution; the flood has slackened some time since and will soon come to a standstill unless some undreamed-of expansion in the facilities of life is discovered. Theoretically, a further growth of population might occur if the standard of living required were reduced. But it is very doubtful whether this factor is really capable of any deliberate control. The indefinable "adequate return" is not luxurious physical ease but the state in which a man can do best with his mind and body; "motor-cars *versus* babies" applies only to a negligibly small part of the population; the ordinary run of men have derived from their animal ancestors a far finer sense of coöperative life.

It follows, as Dr. F. A. E. CREW pointed out in his thoughtful address at the British Medical Association at Cardiff (reported at some length in our issue of Sept. 1st, p. 463), that we must look much further than the boom in frank contraception for our explanation of the diminishing birth-rate. The birth-rate in England began to fall 50 years ago in obedience to the principles of populative growth which, as PEARL has pointed out, apply to yeast cells and the fly *Drosophila* as well as to Spaniards and Dutchmen and Frenchmen and any live thing else. It has continued to fall along the predicted lines and, whether we like it or not, in the absence of some paroxysm of civilisation our numbers will soon cease to increase any further. Deliberate birth restriction may be having a good deal of effect in these, the later, stages of the process, but the main explanation is in man's unconscious or subconscious adjustment to his environment, in his animal response to circumstances. Those will view the Registrar-General's figures with the greatest calm who believe with the authors of the Bridgewater Treatises that the world is constructed in the best possible way.

COMPENSATION FOR SILICOSIS.

COMPENSATION for the occupational disease silicosis is more complicated than for other diseases on account of the long latency and chronicity of the complaint. It has so far only been granted in Great Britain and some of the overseas Dominions. South Africa, with regard to the Rand gold mines, was the first to act, and there prevention and compensation are closely interlocked. Thus any miner who develops ordinary pulmonary tuberculosis is suspended from employment in order to exclude infection from the other miners, and is compensated. In England action was taken first on somewhat similar lines in 1918 under a scheme applied to the small refractories industries. Thenceforward use of the legislative powers taken was delayed until 1927 when compensation was granted to metal grinders, but the somewhat complicated procedure adopted in the refractories' scheme was then abandoned. At the same time a scheme for the pottery industry is in preparation. Action on these lines, however, is proving wearisomely protracted; and every year men are succumbing to this acceptedly occupational hazard in such important industries as stonemasonry, granite-cutting, quarrying, and metalliferous mining, without any compensation. The Home Office has now abruptly altered its policy of proceeding industry by industry, and has just issued a comprehensive draft scheme for granting compensation for death and total disablement in practically every occupation in which the silica risk exists. Even men in coal-mines driving hard headings or sinking shafts through sandstone rocks are to be included, also millstone builders and abrasive soap-makers, as well as the crafts named above. The plan of insisting upon periodical medical examinations, and upon suspension with compensation of those showing early signs, is abandoned. Compensation is only to be granted for total disablement or death. At the same time, while proposing thus to award compensation which is clearly overdue, the Ministry announces the intention to examine in due course each industry affected in order to link up preventive procedure with compensation awards. This procedure is likely to lead rapidly to limitation of the silica hazard. It will have an indirect economic

effect, even where large operations, such as the construction of the Liverpool Cathedral with a dangerous stone, have reached an advanced stage, for the cost of completion must be greatly enhanced. Indeed, the use of sandstones for building purposes is likely to cease; since, however, bricks, cement, and limestone are all home products, no unemployment will be caused thereby. When the proposed scheme has been ratified in whole or in part England will have resumed her usual lead in matters of industrial hygiene. At present, besides South Africa, New South Wales, in relation to the county of Cumberland and to the Broken Hill mines, is ahead of us; and so also are the Canadian provinces of Alberta and Ontario. In several American States, where in the Compensation Acts the word "injury" is defined to include diseases arising out of employment, silicosis is covered with other occupational diseases. In continental countries, on the other hand, no compensation has yet been granted; but in Germany, at any rate, researches already published by L. TELEKY and in progress by F. KOELSCH, must before long result in the granting of compensation. Silicosis is one of the most widespread and fatal of all occupational risks. It has already demanded the attention of the expert advisers of the International Labour Office at Geneva, due mainly to British representation; and is likely soon to be placed on the list of compensable diseases for international adoption.

PSYCHOLOGY IN THE MEDICAL CURRICULUM.

AT the meeting of the British Association the committee appointed to consider the place of normal psychology in the medical curriculum presented its final report. The committee consisted of the following members: Dr. W. BROWN (chairman), Dr. R. D. GILLESPIE (secretary), Dr. C. H. BOND, Prof. E. P. CATHCART, Dr. H. DEVINE, Dr. J. A. HADFIELD, Dr. BERNARD HART, Dr. D. K. HENDERSON, Colonel J. R. LORD, Dr. C. S. MYERS, Prof. G. M. ROBERTSON, Dr. T. A. ROSS, and Prof. T. H. PEAR. They find that of 26 medical schools of the British Isles, 13 offer no courses whatever in normal psychology, while 8 offer optional courses and 5 compulsory ones, but since the report was prepared Edinburgh University has decided to make attendance at a course of lectures in normal psychology compulsory. Most of the medical schools in the Dominions offer courses in the subject. The committee report that they have received official replies in favour of the provision and value of such courses, while the deans of most of the medical schools have responded to their inquiry. After carefully examining existing conditions, the committee recommend that in every medical school a compulsory course of instruction in normal psychology, of not less than 10 and of not more than 20 lectures, should be given during the pre-clinical years—preferably in the second year; and that, whenever possible, it should be supplemented by a course of about ten two-hour meetings in experimental psychology. The committee further recommend that such instruction should be so planned as to serve as a foundation for subsequent lectures in the pathology of the mind given during the clinical years of the medical course, and it need hardly be said that from the point of view of the bulk of medical practitioners this is a most important proposal, as it is in this way that proper correlation of academic instruction with clinical procedure may be obtained.

Thus psychology and physiology would be taught at the same stage of the medical curriculum, and this combination is from every point of view desirable. It is usual to consider the two subjects as parallel, dealing respectively with the normal functions of the human mind and of the human body. Prof. W. MCDOUGALL [1] claims a much wider field for psychology, proposing the distinction between the two sciences that physiology studies the processes of organs and tissues, whereas psychology studies the total activities of the organism. To admit this view without reserve would be to confess that the medical curriculum which contains no course in psychology is absurdly inadequate, and indeed future generations are likely to take this attitude. Meanwhile all will agree that just as physiology provides the necessary basis for subsequent instruction in pathology, so a simultaneous course in normal and experimental psychology would be an excellent preparation for the lectures in morbid psychology which belong to the clinical years. There can be little doubt as to the wisdom of the committee's recommendations. Psychological medicine was at one time almost confined to the study of insanity; to-day it is recognised that the disorders of the mind and of the nervous system embrace a far wider field, and that the ability to recognise them immediately and to treat them effectively are of enormous importance in the everyday practice of the family doctor. We now know that there is not an organ in the body whose disorderly function may not be due to psycho-neurotic conditions. The origin and spread of the exaggerated claims of certain schools of psychotherapy have been largely due to the lack of previous systematic training in normal psychology. The same ignorance has been responsible for the equally untenable position adopted by opposite extremists who believe that functional disorders are merely "imaginary" and therefore demand merely "imaginary" remedies, that medical instruction should be confined to the study of living matter and of material remedies, and that a knowledge of the workings and influence of the mind is of no concern to the ordinary medical student. However congested be the present curriculum, there can be no doubt that by general demand the recommendations of the British Association Committee must soon be carried into effect.

[1] The Battle of Behaviorism. An Exposition and an Exposure. By John B. Watson and William McDougall. London: Kegan Paul, Trench, Trübner and Co. 1928. Pp. 103. 2s. 6d.

FACTORY INSPECTION.—The Home Secretary has appointed a Committee to consider and report what addition to the Factory Inspectorate is required, whether any changes in its organisation are desirable, and what other measures, if any, can be taken to enable the Factory Department to discharge adequately its duties now and in the future. The members of the Committee are:—Sir Vivian Henderson (chairman), Sir Gerald Bellhouse, Mr. R. R. Bannatyne, Mr. Kenneth Lee, Miss H. Martindale, and Mrs. C. D. Rackam. The secretary of the Committee is Mr. L. N. Blake Odgers, of the Home Office.

GERMAN MEDICAL JOURNEY TO EGYPT.—On the occasion of the centenary celebration of the University of Cairo, the Vienna Committee for Medical Tours Abroad has arranged a visit to Egypt covering the period Dec. 14th, 1928, to Jan. 4th, 1929, the journey out being made by Venice, Brindisi, and Alexandria, returning by Rhodes, Athens, and Corfu. The visit coincides with a Congress of Tropical Medicine and Hygiene in Cairo, and the usual winter international exhibition of medical arts and sciences. Programme and information from Dr. F. Barach, Vienna I., Biberstrasse 11.

Annotations.

"Ne quid nimis."

THE YEAR'S WORK AT THE MINISTRY OF HEALTH

ALTHOUGH we still await the Report of the Chief Medical Officer for last year much interesting information is, as usual, conveyed in the Annual Report of the Ministry of Health (1927–28).[1] Its summary of general health questions rightly gives prominence to the amendment of our mental deficiency legislation at the end of last year. The old restriction which confined the application of the Mental Deficiency Act to persons whose mental defect had existed "from birth to early age" has at last disappeared and the new definition of "mental defectiveness" is "a condition of arrested or incomplete development of mind existing before the age of 18 years, whether arising from inherent causes or induced by disease or injury." One advantage of this enlargement of the statutory definition is that it will now be possible to take suitable steps to provide care and treatment for persons suffering from the sequelæ of encephalitis lethargica. Another important piece of legislation which became operative in the past year is the Therapeutic Substances Act, 1925, which is designed to regulate the manufacture, sale, and importation of vaccines, sera, and other therapeutic substances whereof the purity and potency cannot adequately be tested by chemical means. The Act and Regulations, it is stated, have been brought into force without friction. One of the medical officers of the Ministry, in conjunction with a representative of the Medical Research Council, has inspected manufacturers' premises both in this country and on the continent. At the end of last March 36 licences to manufacture had been issued, 43 licences to import, and 11 licences to import for the purposes of research. Other matters summarised in the Report include the winding up of the Voluntary Hospitals Commission. Here, it seems, the Ministry considers that there is no further scope at the moment. "In view of the improved financial position of the voluntary hospitals and the fact that the Government had found themselves unable to make any grant-in-aid of the capital cost of hospital extensions," the Commission has been encouraged to bring its labours to a close by the presentation of its Final Report. Mention is also made of the work of the Committee on Post-Graduate Medical Education. The Committee unanimously decided that the establishment of a new centre with the 300 or 400 beds requisite for providing adequate clinical material was impracticable on the ground of the expense of initial capital cost and annual maintenance. The alternative was the conversion of an existing hospital, and the report gives the reasons for the selection of the West London Hospital at Hammersmith, where there is already a long tradition of post-graduate teaching. The carrying out of the scheme is still delayed by lack of the capital wherewith to make the desired structural alterations. National health insurance practitioners will read with interest the section of the Ministry's report which deals with medical benefit, its cost, scope and administration, the investigation of excessive prescribing, and the revision of the disciplinary procedure. On the whole the Report gives the impression of a general improvement in health standards and facilities. Historically there has been a fusion of public health and local government administration in England. It is satisfactory to find that, when the Minister's hands are so full with changes in the rating system and the poor-law, the claims of public health are not overlooked.

[1] Cmd. 3185. H.M. Stationery Office. 5s.

CHRONIC PYELITIS IN CHILDREN.

MUCH attention has been devoted in recent years to the chronic infections of the urinary tract in children. The occasional occurrence of a valve in the posterior urethra of boys, for example, which has been noted by many observers, suggests that congenital abnormalities should be looked for in chronic cases resisting treatment. In a recent article [1] P. György mentions that this particular deformity was described by Englisch in 1875, a fact which appears to have been ignored by recent writers. György goes on to discuss the causation of chronic pyelitis, quoting cases which have confirmed his view that chronic pyelitis is a serious disease and, if untreated, may well lead to severe affection of the kidney and even uræmia. In nearly all resistant cases some congenital abnormality or interference with the neuromuscular mechanism of the ureters, bladder, or urethra with their sphincters is present. Just as in cases of enlarged prostate in adults deficient renal function may be restored to normal after removal of the cause of obstruction, so treatment of an obvious deformity in the urinary tract in the chronic pyelitis of children is well worth while, even if evidence of impairment of renal function is present. The five cases described by György, however, must be regarded as due to defective neuromuscular mechanism since no congenital deformity could be found to account for the dilatation of the ureters. That many of the older theories with regard to the ætiology of pyelitis can no longer be accepted is brought out by I. Robertson in a plea [2] for further investigation of the pyelitis of infancy. He points out that the theories of infection by upward spread, by the general circulation, or by direct spread from the bowel are none of them satisfactory from the pathological standpoint. The belief that pyelitis is much more common in girls than in boys is not, according to Robertson, altogether borne out by evidence from post-mortem figures, but since pyelitis tends to be more serious in boys than in girls, autopsies may not give a fair indication of sex incidence. In infancy, however, the mortality among girls is certainly not lower than that among boys. Of 105 cases of pyelitis in infants at the Harriet Lane Home, the death-rate is given as 60 per cent. girls and 40 per cent. boys. Dr. Robertson is inclined to believe that the symptoms of many cases of pyelitis are due to a focal suppurative nephritis. The subject needs more attention, for the association between pyelitis and inflammation of other sections of the urinary tract remains obscure. A large series of pyelograms might help to throw some light on the ætiology of the condition, and since they also may provide some guidance to treatment, they should be taken in all intractable cases of chronic pyelitis.

[1] Jahrb. f. Kinderh., 1928, cxx., 253.
[2] Med. Jour. Australia, June, 1928, p. 770.

THE WHEATLEY MEMORIAL.

James Wheatley had a vivid and noble conception of the health service, and his recent death was a loss to public medicine which it may be hard to make good. He was frankly concerned less with the care of sick and abnormal persons than with work which tends to improve the vitality of the ordinary individual. Open-air schools for subnormal children were to Wheatley just the prelude to open-air methods for the school population. The risk of a few accidents should not, he held, interfere with the health and vigorous development in body and mind of the people as a whole, and when he watched German children swimming in the Rhine he thought of the resulting improvement in their health and physique and not of the casualty list of accidentally drowned. Indoor swimming-baths he looked upon simply as places for teaching swimming and for amusement; in the utilisation of our rivers for bathing and open-air swimming he saw a great forward movement in public

hygiene. It is therefore peculiarly fitting for his colleagues in the public health service to perpetuate Wheatley's memory by the provision of a floating swimming-bath on the river Severn near to the town of Shrewsbury, whose health was his lifelong care. From the further side of the raft swimmers will have direct access to the river, while on the hither side there will be, pace Wheatley's gospel of living dangerously, a safe and sheltered bath for non-swimmers and children, with two screened lawns on the adjoining shore where men and women respectively can enjoy sun-bathing before and after entering the water. No charge will be made for admission to the lawns or dressing sheds, but a special pavilion is to be provided for those who can afford to make payment towards the upkeep of the bath. It is hoped by the promoters of the Wheatley Memorial that this bathing-place may become a model of its kind and extend further the influence of this great sanitarian in bettering the health of the people. The estimated cost is £2000, of which an anonymous donor has given £250; contributions may be sent to Dr. A. D. Symons, at 74, Wyle Cop, Shrewsbury.

INVESTIGATIONS ON PUERPERAL FEVER.

THE annual report of the Metropolitan Asylums Board for 1927–28 contains a valuable section on the investigations carried out on cases of puerperal fever admitted to their hospitals. The pathological side of this work is under the care of Dr. Leonard Colebrook. His report is in agreement with the views now generally held with regard to the causative organism of this disease—i.e., that nearly all severe cases of puerperal fever are due to infection by a hæmolytic streptococcus. In every fatal case investigated by him this organism was found and appeared to be the cause of death. A technique has been evolved by which the number of organisms present in the circulating blood can be estimated quantitatively. In fatal cases the number of streptococci per c.cm. of blood was found to increase in a more or less regular fashion until death, the number of organisms found in the blood varying between 5 and 5000 per c.cm. Only one patient survived in whom the number of streptococci exceeded 30; of those in whom the number was below 30, one-quarter lived. Contrary to the general views on the causation of rigors, the blood was often found to be sterile when rigors occur, repeated blood cultures proving negative. At the present time much attention is being directed to the association between the streptococcus of scarlet fever and the streptococcus of puerperal fever. Dr. Colebrook points out that there is one great difference between these two diseases. In scarlet fever the symptoms are the result of the action of an exo-toxin, whereas in puerperal fever the cause of the symptoms is the presence and proliferation of streptococci in the tissues and in the blood. He considers, therefore, that treatment of the two diseases should be on fundamentally different lines. In scarlet fever an antitoxin is required, whilst in puerperal fever antibacterial measures are called for. Post-mortem examinations revealed the fact that in most fatal cases gross septic foci were to be found in the uterine wall, broad ligaments, or pelvic cellular tissues, as well as infected clots in veins. It is difficult to see how any drug could reach such sites in sufficient concentration to be effective. Hope for the future appears to rest in early treatment by some efficient bactericidal agent. Four lines of treatment have been investigated: immuno-transfusion, passive immunisation by serums, intravenous administration of mercurochrome, and intravenous administration of organic arsenical preparations. In some of the patients who survived no specific treatment was carried out. Immuno-transfusion is now performed with whole blood. A preliminary leucocytosis is induced in the donor by the injection of nuclein. On the whole, the results have not been as good as had been hoped. If a high degree of immunity can be induced in the donor against the specific organism, better results may ensue. Various samples of serum from different laboratories have been tested. The result of this work is largely negative; very little increase in the bactericidal properties of human blood against hæmolytic streptococci was found. Mercurochrome was found to have no effect on the bactericidal power of the blood.

Arsenical drugs cause a marked increase in the bactericidal powers of the blood, and Dr. Colebrook considers this to be a most hopeful line for further investigation. Unfortunately the results obtained clinically do not confirm this optimism, since elsewhere in the report Mr. James Wyatt declares that the various organic arsenical preparations have had little or no effect on the course of the disease in cases of septicæmia. It is interesting to note that in 6 out of 22 cases operated upon for general peritonitis no vaginal examination had been made.

OBVIOUS AND OBSCURE INFECTIONS OF THE CENTRAL NERVOUS SYSTEM.

THE existence of epidemic diseases of the central nervous system is now well established, and the epidemic incidence of cerebro-spinal fever, poliomyelitis, and encephalitis has been memorable in the records of the first quarter of the twentieth century. In the George M. Kober Lecture, delivered on March 27th, 1928, at Georgetown University, Washington,[1] Dr. Simon Flexner reviews the history of these diseases and offers interesting comments on their ætiology and epidemiology. The large epidemic wave of cerebro-spinal fever which broke over Europe and America in 1904–05 and culminated in the pandemic of the war-period, appears to have spent its force and since 1920 the incidence of the disease has been endemic rather than epidemic. It is possible that emigrants from Germany and Austria conveyed the infection to the United States. The origin of epidemic poliomyelitis may be traced to north-western Europe—especially Sweden and Norway—and here again Dr. Flexner believes immigration to be responsible for the conveyance of infection. The first two outbreaks of poliomyelitis in the United States occurred on the eastern coast and in the States adjoining Minnesota, the western homeland of the Scandinavian emigrants. The outlook for this disease is less favourable than for epidemic meningitis. It arose in pandemic form in 1906–07; with many fluctuations epidemics have since recurred in Europe and the United States in late summer and autumn. In 1916 an unprecedented wave of poliomyelitis swept over New York State in which more than 20,000 cases were reported and many more cases, paralytic and non-paralytic, probably occurred. In 1926 outbreaks of some magnitude occurred in England and France, and in 1927 German Saxony, Roumania, and the United States were attacked. Epidemic encephalitis, the third disease which has reached epidemic proportions in the present century, can be traced back to two relatively small outbreaks during the war, one at Bar le Duc, in France, in 1916, the other in Vienna in 1917, which was well described by Economo. The extension of the disease was rapid. It appeared in England and Wales in 1918 and affected much of Europe. In 1919 cases were seen in the United States, and by 1920 the disease had become pandemic, whether permanently or not, Dr. Flexner is unprepared to say. He inclines to the view that epidemic encephalitis is of recent origin. The theory that it was confused in the past with other maladies does not appeal to him, not only because the clinical manifestations are very impressive, but because he considers that the after-effects are too severe and serious to have escaped incorporation into medical history. Dr. Flexner holds that meningitis and poliomyelitis may be dismissed from connexion with influenza since their epidemics arose independently. The epidemics of influenza and encephalitis certainly overlapped, but the height of the wave of encephalitis

[1] Jour. Amer. Med. Assoc., July 7th, 1928.

came several years after that of the influenza wave. He points out also that clinical cases of encephalitis were absent from the records of the pandemic of influenza of 1889–92. As to ætiology cerebro-spinal fever is due to the meningococcus, and the researches of Dr. Flexner and his collaborators at the Rockefeller Institute have demonstrated that poliomyelitis is due to a filter-passing virus. Epidemic encephalitis is probably due to a similar virus. Dr. Flexner reviews the work on the herpes virus and concludes that it is unlikely that simple herpes and epidemic encephalitis have a common ætiology. Accumulated evidence indicates that all these nervous epidemics are man-borne infections spread chiefly by way of the respiratory tract. Dr. Flexner expresses no definite opinion on post-vaccinal encephalitis, holding that its exact ætiology is still obscure.

PURER RIVERS.

THE first report of the Joint Advisory Committee on River Pollution is a businesslike and unanimous document. The law, it seems, is not inadequate to prevent contamination, but the law is not enforced. Serious and avoidable pollution exists, says the Committee, partly because the jurisdiction of the various administrative authorities is confined to a particular area only, partly because the bodies which ought to enforce the law have a number of other more pressing duties to discharge, and partly because the game-keepers are also poachers. The prevention of pollution should be in the hands of an authority exercising jurisdiction over the river as a whole (including its tributaries) at any rate so far as non-tidal waters are concerned. The creation of rivers boards or joint committees for this purpose is already possible under the existing law. Under Section 14 of the Local Government Act of 1888, the Ministry of Health can set up such bodies by Provisional Order on the application of the county councils and county borough councils concerned. The report recommends that this existing provision be specially brought to the notice of all these councils. There is reason to believe that the necessary applications to the Ministry of Health would then in many cases be made, and an important step would have been taken towards the ideal of purer rivers. The rivers Thames and Lee are controlled by special statutory Conservancy Boards with which the report does not propose to interfere. The powers of these two bodies, so vital to the water-supply of the metropolis, are already greater than the ordinary powers given by the River Pollution Acts. Indeed the methods employed by the Metropolitan Water Board for treating Thames water have, both in respect of finance and purification, been so successful as to encourage recourse to river water for domestic supply, and have been officially praised in the recent annual report of the Ministry of Health. Elsewhere, it is recommended, the Rivers Board areas should be big enough to make sure that skilled officers can be employed, and not so big as to make it impossible for the chief officers to keep themselves thoroughly informed of the existence of any pollution and the best means of prevention. Since effluents and local conditions vary, the problem is best dealt with by local effort, though central research must be pressed forward and results made generally available. The report is evidently impressed by the efficiency and economy of the three group-bodies which are already at work—the Ribble Joint Committee, the Mersey and Irwell Joint Committee, and the West Riding of Yorkshire Rivers Board. Though these bodies have power to take legal proceedings against offenders, legal process apparently is resorted to only in extreme cases. In most instances, advice and persuasion are found effective, and it seems to be happily the fact that the relations between the Rivers Boards, fishery boards, local authorities, and manufacturers are cordial and mutually helpful. It is obvious that this is not the time when Parliament can be asked to pass fresh legislation which may place further burdens upon industry. The figures of cost for efficient treatment of sewage in particular districts are sometimes extraordinarily high. Nevertheless, it is reassuring to find that much can be done under the existing law, that needless, wilful, and remediable pollution can be prevented without interfering with hard-pressed industries, and that there is evidence of a keener popular interest in the purity of our rivers than heretofore. Wider changes in the law and a more closely coördinated study of the problems of river purity, land drainage, and water power resources may come some day. Meanwhile the Joint Advisory Committee makes some simple proposals which can be tackled forthwith. As appointed by the Ministries of Health and of Agriculture and Fisheries, the Committee is fully representative of local authorities, water and rivers boards, and the manufacturing, fishing, and agricultural interests. Its report carries the greater weight on this account, especially as it has achieved unanimity.

THE PATHOGENY OF ANGINA PECTORIS.

ANGINA has always been somewhat of a stumbling block to the morbid anatomist, the autopsy findings are so varied and at times so inadequate. A number of distinguished physicians, including Allbutt in this country, Vaquez in France, and Wenckebach in Vienna, have found in aortitis an explanation of the symptoms, but aortitis could only act by producing a temporary rise in blood pressure during the attack—an assumption which is by no means proved. Mackenzie's theory that the pain is attributable to exhaustion of the heart muscle is also unsatisfactory. Anatomical evidence in many cases is in favour of coronary disease being the determining factor, but this is not invariably present, and in recent years there has been a tendency to abandon the anatomical in favour of a physiological explanation which will account for the varied post-mortem findings. The evidence in support of the physiological hypothesis that angina is due to anoxæmia of the heart muscle is well presented in a recent paper by C. S. Keefer and W. H. Reznik,* who, following Heberden's original description, define angina as a condition characterised by pain of a paroxysmal nature provoked by an increase and relieved by a diminution in the demand made upon the heart. They add that the diagnosis of angina should always imply the likelihood of sudden death. The similarity of the pain in angina to that in intermittent claudication, as well as the experimental evidence that voluntary muscles which are made to contract when their blood-supply is defective are easily fatigued, and that the contraction is accompanied by pain, strongly supports this hypothesis. Further, it is well known that anoxæmia is an important predisposing cause of ventricular fibrillation. This fact will account for the frequency with which sudden death is liable to occur in these cases. In affording an explanation of the persistence of the pain in coronary thrombosis the physiological hypothesis is equally satisfactory; for in that condition, unless the anastomoses be sufficient to compensate for the occluded artery, the anoxæmia is permanent and leads to infarction.

THE PARATHYROIDS AND BONE UNION.

MUCH attention has been paid of late to the significance of the parathyroids in metabolism, but experimental work has not yet thrown much light on clinical application. The work of Collip [1] and others has demonstrated that an extract can be obtained from these glands which can overcome the syndrome of tetania parathyreopriva with its attendant low blood calcium. The injection of active parathyroid extracts may in animals even lead to fatal results accompanied by very high blood-calcium values. The older observation of Koch [2] that methyl-guanidine appears in the urine of parathyroidectomised dogs, and of Paton [3] and his co-workers that the

* Arch. Intern. Med., 1928, xli., 770.

injection of guanidine and methyl-guanidine in animals leads to tetany-like symptoms gave rise to the theory that the parathyroids formed a part of the detoxicating mechanism of the body. The view more generally held to-day is that the parathyroids exert some at present unknown influence on calcium metabolism. Efforts have consequently been made to work out their relationship to bone metabolism, particularly from the clinical aspect of the healing of fractures. It was as long ago as 1907 that Erdheim [4] first reported experiments on rats which showed that, as a result of parathyroidectomy, the teeth lost their yellow transparent appearance, and became white and opaque. He noted also that there was a diminished and delayed deposition of calcium in the dentine, and that the enamel was decreased or thin or lacking. Hohlbaum [5] and others confirmed these results as well as Erdheim's further contention that reimplantation of the glands restored the teeth to normal. Other observations of Erdheim's,[6] however, to the effect that parathyroidectomy caused delay in the healing of fractures were not substantiated by Hohlbaum, or by Jovane and Vaglio,[7] or by Korenchewsky.[8] The latter pointed out that Erdheim's experiments were vitiated by lack of dietary control. Other workers, however, have supported Erdheim's conclusions. Ogawa,[9] for instance, investigated the relation of these glands to the healing of fractures, and reported that union was slower after their removal. Dieterich [10] also found that this operation delayed callus formation, though X ray and histological examination proved that otherwise the process was normal in every respect. Morel [11] found in cats a marked retardation in the formation of callus after parathyroidectomy, but only in young animals and not in adults.

More recent work has, however, called in question some of the older experiments. Gates and Grant (1927)[12] have demonstrated fairly conclusively that subtotal removal of the parathyroids creates a deficiency which is rapidly compensated by hypertrophy of the remaining tissue, and that the blood calcium is restored to normal in a week to ten days. Anything short of complete removal therefore is not a reliable test of under-function of the tissue after this period of time. Until recently few observations have been made as to the effect of parathyroid extracts on the metabolism of bone, apart from scattered statements in the literature referring to its use in abnormal cases. There is some doubt, however, as to the activity of the extracts employed in these cases, for it is only since Collip isolated the active principle of the gland that definitely active preparations have been available. Morel, however, in 1909, claimed that subcutaneous injections of a parathyroid extract in young animals produced bones of twice the thickness of those in controls, regardless of the amount of calcium in the food. Recent experiments with Collip's extract do not support his work. Fine and Brown, working at Harvard, have published [13] the results of their experiments on bone repair under the influence of the extract, and their conclusions are in startling contrast to Morel's. They conclude that the clinical use of the extract for delayed bone union is not based on any sound principle, can do little if any good, and in fact may do harm. The number of their experiments, however, was small. The whole question of the relationship of the parathyroids to bone metabolism is still sub judice, and requires more extensive research before any definite conclusions can be arrived at.

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STANDARDS OF ATMOSPHERIC POLLUTION.

In the thirteenth report of the Advisory Committee on Atmospheric Pollution, to which reference has already been made, there is an interesting suggestion of the possibility of setting up limits or standards of permissible pollution. In the report the cities have been classified according to a scale of increasing pollution into four classes—A, B, C, and D. A table for the years 1914–15 to 1926–27 indicates a tendency towards improvement in many places, but unfortunately this improvement, as we have pointed out, is rather in the moderately clean than in the very dirty cities, which show little change. The important point is, however, that a step has been taken towards setting up some standard of clean air. The places classified *A* may be called clean, while the *D's* are certainly dirty. With the information now becoming available it should shortly be possible to take a most important step from a public health point of view—namely, to set up a standard of clean air, a condition of the air of a city which is to be aimed at and is reasonably attainable. So far only a standard for deposited impurity has been suggested; the limits of permissible suspended dust still remain to be fixed. Those who are engaged with these standards would find their work simplified if reliable information could be obtained as to the minimum requirements of sunlight, and especially of ultra-violet light, for healthy living. This would be a first step towards fixing limits of smoke pollution which could not be exceeded without detriment to the health of a city.

DARWIN'S KENTISH HOME.

An announcement made at a meeting of the General Committee of the British Association in Glasgow in respect of the destination of Down House, Darwin's home in the county of Kent, is of real interest to the medical profession, when we remember the fundamental revolution in our philosophy and endeavour that has followed upon Darwin's work. Mr. Buckston Browne having acquired the property from Prof. Charles Galton Darwin, F.R.S., grandson of the great naturalist, has transferred its possession to the British Association under the most liberal conditions, and with an endowment for its maintenance and preservation. Mr. Buckston Browne's public spirit and generosity which have before now obtained publicity in spite of his retiring manner of doing good, are marked, as on the previous occasions, by conditions which are calculated to extract from his open-handed action the fullest benefit. He has assured the Council that he will make himself immediately responsible for the whole gift, and that while a committee will have to consider the details, he will also furnish an endowment fund, bringing his donation up to the splendid sum of from £12,000 to £15,000. Sir Arthur Keith, President of the General Committee of the Association, has suggested that out of the endowment fund money should be expended upon the foundation of a prize to be given every second year for the best contribution to biological knowledge, to be awarded by the Council, and to be known as the "George Buckston Browne Prize." For the moment Down House serves as a private school, but as soon as the property can become an effective gift to the nation Mr. Buckston Browne desires the house to be open every day of the week between the hours of 10 and 6 without charge, while the grounds of the house, which are of considerable extent, he intends should be employed for the benefit of science. Further, certain of the rooms in the house, particularly that in which so much of the "Origin of Species" was written, he proposes should be furnished as nearly as possible in accordance with their old appearance, and already this project is in process of fulfilment through the cordial help of the Darwin family, without which, it should be said, the new ownership of the property could not have been obtained. Charles Darwin's study

chair and his machine for the weighing of letters and parcels have already been given by the late Mrs. Litchfield, a daughter of Charles Darwin, and the British Association is desirous of securing, for the transformation of the house into a veritable Darwin memorial, any articles known to have been in the possession formerly of Charles Darwin or to be associated with his literary work. Mr. Buckston Browne has commissioned the Hon. John Collier to paint replicas of the well-known portraits of Darwin and Huxley, and when the shelves of the old study are filled with all the editions of Darwin's works and the collections of original documents pertaining to these works, Down House will become a centre of research into the origin and development of the greatest intellectual movement the world has ever seen. The association of Down House with Charles Darwin and his family is extremely close. The property was presented to him by his father in 1842, three years after his marriage. His two elder children were born before the arrival at Down, but Mrs. Litchfield, and the four distinguished sons, George, Francis, Leonard, and Horace, were born at Down House. Charles Darwin died exactly 40 years after taking up his residence, in the seventy-fourth year of his age. There has probably never been one house associated with such a record of live and permanent work, brilliant in its scientific aspect and limitless in its power for good.

SAFETY AND HEALTH IN INDUSTRY.

SEVERAL points of interest to safety and health are presented in the latest annual report of the Chief Inspector of Factories.[1] First, reference is made to the opening of the Home Office Museum in Westminster where examples of good practice in safety appliances and hygienic environment are displayed. Next stress is laid on efforts to extend safety-first organisations throughout factories with workmen's committees and safety supervisors. Examples are given of excellent results attained and much expense on account of accident compensation saved. Attention in the section devoted to purely medical matters is directed to the Lead Paint (Protection against Poisoning) Act, 1926, under which the house painter is now protected. Information was received of 98 cases of lead poisoning among these painters with 21 deaths, as compared with 249 cases in all other industries with 14 deaths. Clearly the case fatality is much higher among painters. The long fight in the potteries against plumbism is being rewarded; last year only 14 cases with six fatalities occurred, compared with 78 cases in 1910 with 11 deaths. The extended use of low solubility glaze is held to be largely responsible; among 554 workers using this glaze, not one was found with signs of lead poisoning. But lead is being replaced as an occupational risk by skin troubles and particularly by epitheliomata which again accounted for 49 deaths. Pitch and tar are great offenders and caused 48 cases with 6 deaths; here periodical medical examinations to detect warts early are of the utmost value; one surgeon gives all early cases radium and only one case out of 56 has so resisted treatment as to require excision. But the chief instigator has been mineral oil which claimed 101 cases among mule-spinners with 31 deaths; preventive measures among these men have not been in force sufficiently long to be effective. Dermatitis of all kinds continues to demand attention; 525 cases were referred for inquiry. Of these, 13·7 per cent. were due to alkalies; 11·2 were due to oil, chiefly oil acne among engineers; dyes, acids, sugars, and turpentines each accounted for over 6 per cent.; french polish and paraffin each claimed over 5 per cent.; bakers' dough 4 per cent.; and accelerators of rubber 3·6 per cent. Another rival for first place among occupational risks is dust; here that composed of silica attracts particular attention on account of its slow, but specific, toxic action. Fortunately in the metal grinding industry, abrasive wheels, made of carborundum, are replacing sandstones; this change is being accelerated by granting to grinders compensation for silicosis. An inquiry among 1011 cotton weavers disclosed 6·7 per cent. had noise deafness, and 19·4 per cent. of those who had worked for 21 years and over. An important first-aid order was made prescribing a grade or quality for all materials for dressings used in factories. Reviewing the report as a whole it displays throughout a greatly improved and still improving hygienic environment throughout our industries.

[1] Annual Report of the Chief Inspector of Factories for 1927. Cmd. 3144. H.M. Stationery Office. 2s. 8d.

HYPERTONIC SALT SOLUTION FOR GLAUCOMA.

IN recent years much stress has been laid on osmosis occurring between the capillaries and the aqueous humour as a factor in the maintenance of normal intraocular pressure and in the pathogenesis of glaucoma. In 1926 W. S. Duke-Elder published experiments proving that intraocular tension can be temporarily lowered by the slow intravenous injection of a hypertonic solution of salt into the general circulation, and advocated this procedure in certain cases of glaucoma as a temporary measure to reduce tension prior to operation. This method had already been tried with success in four cases at Moorfield's Hospital. In the report of the Madras Government Ophthalmic Hospital for 1927, edited by Lieut.-Colonel R. E. Wright,[1] there is further evidence bearing on the subject. A series of 20 cases of glaucoma patients were taken without selection, so far as the variety of glaucoma was concerned. Their body-weight, blood pressure, intraocular tension, and a sample of blood were taken before saline injection, and again at intervals afterwards. The hypertonic solution was injected slowly into a vein of the arm—30 g. per 100 c.cm. of sodium chloride, the dose given being in most cases 20 c.cm., which worked out to an average of 0·134 g. of sodium chloride per kilogram of body-weight. Within 15 minutes of giving the injection the average fall of intraocular tension was from 46·7 to 34·2, and this fall was maintained with slight variations for 24 hours. The writer concludes that therapeutically the injection of strong sodium chloride solution is a valuable means of lowering the intraocular tension, effective in the great majority of cases, and especially valuable as a preoperative procedure; but cautiously adds that it remains to be shown whether the fall in intraocular tension is more closely connected with the osmotic pressure or with other changes in the constitution of the blood. Lieut.-Colonel Wright's conclusions are much the same as Mr. Duke-Elder's.[2] The main danger, according to the latter authority, is a sudden fall in the blood pressure which may occur during the injection, but this is obviated if the injection is made slowly and regularly, with a patient in the recumbent position.

THE Clinical Congress of the American College of Surgeons is held in Boston this year from Oct. 8th to Oct. 12th. The Hunterian Oration of the College will be delivered by the Editor of THE LANCET, Sir Squire Sprigge, upon whom the Honorary Fellowship of the College will be conferred.

[1] Madras Government Press, 1928.
[2] Recent Advances in Ophthalmology, p. 211.

UNIVERSITY COLLEGE HOSPITAL.—The annual dinner of past and present students in this the centenary year of the Medical School will be held at the Hotel Cecil, London, W.C., on Oct. 12th, at 7 P.M. The chair will be taken by Surgeon Vice-Admiral Gaskell, Medical Director-General of the Navy. Tickets may be had on application to the hon. secs. at the Medical School.

The Clinical Interpretation of Aids to Diagnosis.

A Series of Special Articles contributed by Invitation.

III.—REPORTS ON SWABS FROM THE THROAT AND NASAL PASSAGES.

By J. E. McCartney, M.D., Ch.B., D.Sc.,
DIRECTOR OF RESEARCH AND PATHOLOGICAL SERVICES, METROPOLITAN ASYLUMS BOARD.

(2) Cases not Suspected of Diphtheria.

Spirochætes and Fusiform Bacilli.

The examination of a direct smear of the swab after staining with dilute carbol-fuchsin or methyl-violet will determine or negative the presence of Vincent's angina. Microscopically, numerous large fusiform bacilli with pointed ends, together with spirochætes having wide irregular coils, may be found, and this is sufficient for a diagnosis. It must be remembered that Vincent's angina and true diphtheria may occur together and that an immediate report of Vincent's angina does not exclude the possibility that diphtheria may be present as well. In the laboratory all throat swabs are cultured and examined for diphtheria bacilli as a routine, irrespective of the direct examination, so there is no danger of the more serious disease of diphtheria being overlooked.

Hæmolytic Streptococci.

Throat swabs are sometimes sent to the laboratory to ascertain if hæmolytic streptococci are present in cases of convalescent scarlet fever patients ready for discharge. Although the hæmolytic streptococcus plays an important part in scarlet fever, the presence of these organisms does not mean that the patient is capable of transmitting the disease, or that the streptococci found are necessarily the cause of the illness. Over one-half of convalescent scarlet fever patients still harbour hæmolytic streptococci on discharge. Although certain strains of hæmolytic streptococci isolated from early cases of scarlet fever do fall into certain serological types, yet the whole group of hæmolytic streptococci are so closely interrelated that it is not possible to identify any one type or types as the cause of scarlet fever. Therefore a positive report of hæmolytic streptococci present in scarlet fever does not have the same significance as a positive report of diphtheria bacilli in convalescent diphtheria, and does not mean that the patient is necessarily infective or that he must be kept isolated. The release from quarantine of recovered scarlet fever cases must be determined solely from the consideration of the patient by the physician and not with reference to the laboratory report, although, of course, a negative result in such cases is of great assistance in arriving at a decision.

Meningococci.

In the usual examination of a throat swab, meningococci are not specially looked for. If, however, there is an epidemic, or cases of meningitis are occurring at the time, the bacteriologist will pay special attention to the Gram-negative group of cocci found in the nasopharynx and throat, and will usually determine or exclude the presence of meningococci without being definitely asked to do so. Special laboratory tests extending over several days are necessary to isolate meningococci; if they are found to be present the patient must be regarded as a meningococcus carrier and treated accordingly.

In examining for meningococcus carriers it is not advisable for the practitioner to take a throat or postnasal swab and send it to the laboratory; the bacteriologist should be asked to take the swab himself. In the first place special postnasal swabs such as West's swabs should be employed, and secondly, owing to the feeble vitality of the organism outside the body, it is necessary to inoculate the appropriate medium immediately, and to incubate it without delay, or to keep it warm until it can be placed in the incubator. Unless these precautions are taken no reliance can be placed on a negative report. Three successive negative reports are necessary before a known carrier can be considered free of infection.

The Normal and Pathological Flora of the Tonsils and Upper Respiratory Tract.

When considering the organisms present in cases of catarrh or other inflammatory conditions of the throat the normal flora must first be considered. In normal healthy children the commonest throat organisms are the "viridans" type of streptococcus, and Gram-negative cocci of the *Micrococcus catarrhalis* group, which are almost constantly met with. In addition, a few colonies of both α and β hæmolytic streptococci, together with some colonies of staphylococcus albus, are usually present. Occasionally Friedländer's bacillus and the pneumococcus are noted. In inflammatory conditions of the throat, however, the flora becomes very much more numerous, and certain organisms, rarely or never met with normally, such as pneumococci, *Staphylococcus aureus*, hæmophylic bacteria of the *B. influenzæ* type, and diphtheroids may predominate, while hæmolytic streptococci may be very abundant.

In cultures from the throat of the healthy child the growth of organisms is not great, and the number of bacteria present in the throat secretion is comparatively small. In his report the bacteriologist will indicate the predominating organism and the relative frequency. Reports such as the following indicate that there is an abnormal change in the flora of the throat, and that the condition requires attention by the practitioner.

(*a*) "Cultures show an abundant growth of an almost pure culture of pneumococci."

While pneumonia is usually due to the pneumococcus, such a report does not necessarily indicate that the patient either has, or will develop pneumonia. A pneumococcal infection of the throat or trachea may be present, but in young children the possibility of pneumonia must not be overlooked. Careful attention should be directed towards the chest, and the possible spread of infection down the respiratory tract must be kept in mind.

(*b*) "Very numerous colonies of hæmolytic streptococci present."

Here attention should be paid to the tonsils as the likely site of the infection.

(*c*) "Numerous colonies of *B. influenzæ* developed on blood-agar."

This report does not necessarily mean that the case is true influenza, since the precise cause of epidemic influenza has not yet been determined. *B. influenzæ* is met with in catarrhal conditions of the respiratory tract apart altogether from this condition.

(*d*) "Cultures show an abundant growth of organisms comprising hæmolytic streptococci, pneumococci, *M. catarrhalis*, and *Staphylococcus aureus*."

These findings are usually noted in cases of sore-throat and "colds."

On the other hand, a report such as—

"In direct films very few organisms could be found. In cultures a few colonies of *M. catarrhalis* and *Staphylococcus albus*, together with an occasional colony of *Streptococcus viridans* developed"

indicates that the flora is normal and that the throat is healthy.

Septic Foci in the Rheumatic Diseases.

Chronic Catarrhal Conditions of the Nose and Throat.—In these cases, particularly if involvement of the sinuses is suspected, swabs should be taken from the nose as well as from the throat, while a swab from the nasopharynx should also be forwarded if possible. This latter may be obtained by bending the

wire of the swab at an angle and passing the end of the swab behind the soft palate into the naso-pharynx. The operation is facilitated if the patient be asked to phonate during the process. Vaccines are often of use in these conditions, particularly when one type of organism predominates, but failures are not uncommon.

Septic Tonsils.—Swabs from the tonsil are sometimes sent to the laboratory with a request for information as to whether the tonsils should be removed or not. Such a problem as this is outside the domain of the bacteriologist. He can state what organisms are present and their relative abundance in the material submitted; he may indicate whether such findings are abnormal, but beyond that he can give no help. He does not know how the swab was taken—whether from the surface of the tonsils or from the crypts. The report of the bacteriologist may assist the practitioner in arriving at a decision for or against tonsillectomy, but this must be reached mainly on clinical grounds.

The laboratory worker is frequently asked to give information regarding certain clinical conditions merely from the bacteriological examination of a throat swab, and it is opportune here to indicate the limitations of the information which can be supplied.

Acute Rheumatism.—Clinical experience suggests a connexion between rheumatic conditions in children and an abnormal state of the tonsils. At present it is not possible to state definitely what the causal organism of rheumatism is. A non-hæmolytic streptococcus has been thought by some observers to be responsible, but the isolation of such an organism from the tonsils has no special significance, since non-hæmolytic streptococci are almost invariably present in all throats, and, moreover, the non-hæmolytic cocci from rheumatic cases are indistinguishable by ordinary methods from similar organisms obtained from non-rheumatic conditions or healthy individuals.

Chronic Rheumatism and Rheumatoid Arthritis.—On the assumption that these conditions are due to a septic focus, often in the nose or throat, swabs are sometimes sent to the bacteriologist in order that he may isolate the offending organism and prepare a vaccine. Here again no one organism can be said to be responsible, and while some workers claim that certain types of streptococci are the cause of these conditions, nothing is definitely proved. A vaccine prepared from a certain organism may be beneficial to the patient, while the same organism may be present in a second case, and a similar vaccine be of no value. Some cases of chronic rheumatism do respond to vaccine treatment, but there are many others, apparently similar clinically, in which no benefit can be derived, even after a course of vaccines prepared from a number of organisms isolated from the nose, throat, or teeth. The practitioner therefore should realise: (*a*) that there is no one organism responsible for chronic rheumatism, or rheumatoid joint conditions; (*b*) that a vaccine or succession of vaccines prepared from cultures of a throat swab may fail to benefit the condition.

CONCLUSION.

In conclusion, it is urged that a greater coöperation should be maintained between the physician and the bacteriologist. The latter should be afforded full information as to the nature and source of the material submitted, and in turn he will be able to give the clinician more assistance in the diagnosis and conduct of the case.

GOLDEN-SQUARE, THROAT, NOSE AND EAR HOSPITAL. This hospital, which is within easy reach of Piccadilly-circus, is about to open 20 pay beds. These will be available at a moderate weekly charge, plus a fee to the surgeon, for those patients who are not eligible for admission to the general wards, but who are nevertheless unable to meet the expenses of a nursing home. A prospectus relating to the private rooms will be sent on application to the Secretary-Superintendent.

Special Articles.

AN OUTBREAK OF BACTERIAL FOOD POISONING.

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DURING the night of Tuesday, August 16th, 1927, and throughout the 17th and 18th, 12 nurses, 1 maid, and 25 patients in a hospital were suddenly seized with vomiting, abdominal pain, and diarrhœa, usually accompanied by fever and preceded in many cases by headache, shivering, and aching pains throughout the body. The symptoms were in all respects typical of food poisoning, and in most cases lasted for three or four days, gradually abating. In a few instances the green stools persisted for about ten days. Onset occurred in the case of the nurses during the night and early morning of August 16th–17th and of the patients during the 17th and 18th. The sudden and simultaneous sickening of several people with these symptoms made a diagnosis of food poisoning almost certain.

The Infecting Agent.

The Particular Food Implicated and the General Distribution of the Outbreak.—On investigation it was found that the only item of food common to all those affected was minced meat—cooked meat minced and cooked a second time. Most of the nurses and maids in the hospital, who, it should be noted, have no food in the wards, had partaken of this minced meat for supper on Monday evening, August 15th, in the form of shepherd's pie. Of the 18 day nurses 12 were affected and three of the six who were unaffected did not have mince. Only one maid had mild symptoms. The sisters had no mince and escaped. Of the 56 patients in the wards 25 were affected; 21 of them had the same mince on Monday, August 15th, and Tuesday, the 16th, at the midday meal, while four had gravy from the same meat. Only one ward inmate who consumed the mince and two who took the gravy escaped. In all cases where symptoms arose the food had been last taken within about 24 to 36 hours previously. The meat, as originally cooked and served hot, was consumed by almost all the hospital staff without untoward effect. Also, no effects followed the eating of the same meat served cold. It was not until this meat was served in the form of mince or gravy that symptoms of food poisoning followed. The high percentage of infection of the ward inmates and day nurses will be noted, in contrast with the immunity of the night nurses and maids.

Composition of the Mince.—Unfortunately none of the mince was available for bacteriological examination when the outbreak was discovered. The utensils which had contained it had also been cleaned more than once. The chief constituent of the minced meat was beef brought to the hospital on Saturday, August 13th. There was also some lamb and salted beef. The beef and lamb were first roasted, and a portion of each consumed hot; a portion was also eaten cold later. The portions that remained were minced, a few scraps of salt beef being added during the mincing, and the mince, so constituted, was served with gravy to the children at midday on Monday, August 15th. The same mince was eaten by the nurses and maids that night for supper. Some of the mince was again served with gravy to some of the children on Tuesday. So far as was known no old

scraps of meat of any kind were incorporated in the mince by the cooks.

Contamination of the Meat.—The beef, from which the mince was almost entirely derived, was traced back to a live beast reared at a local farm. The beast was healthy, and its flesh gave no sign of disease post mortem. Slaughter in the public abattoir, conveyance, storage at the butcher's premises, and in the hospital, and its handling and preparation generally were carried out under conditions unfavourable to casual contamination. Other portions of the carcass were sold retail to the public without causing any illness which could be traced by the most careful inquiry. It must be remembered, however, that odd scraps of mutton and salted beef were thrown into the mincer and their varied origins were untraceable.

Possibilities of Infection in the Hospital from Human Sources.

J. M., a porter, had diarrhœa during the night of August 11th–12th. This continued for several days, but was not sufficient to cause him to go off duty. He lived in the lodge with his wife and had his meals there. His meat-supply was from a different source. This man was supposed not to get any food from the hospital supply, but he visited the kitchen precincts to help to carry the food to the wards. He had not eaten any of the mince, and, in any case, this was not made until some days after he was taken ill. The porter's symptoms started before the meat—making up the bulk of the mince—was actually delivered to the hospital, and they occurred some days previous to the outbreak among the staff and patients. The bacterial and serological findings in his connexion will be discussed later.

O. M., a nurse, was warded on August 4th as a suspected case of influenza or typhoid fever. She had symptoms closely resembling those observed in the outbreak. The fæces and blood, however, were subsequently found negative to all tests.

W. F., a nurse, was warded on August 14th. She had similar symptoms, which began with vomiting on Saturday evening, August 13th. She had not eaten any of the suspect mince and yet her blood showed a weakly positive reaction to *Bacillus aertrycke*.

Laboratory Investigation.

Epidemiologically and clinically the symptoms were in favour of an infection rather than an intoxication, and seemed to point to one of the Salmonella group of organisms. Specimens of fæces and vomited material were collected from several of the patients for examination at the Public Health Laboratory and similar samples were also sent to Dr. W. M. Scott at the laboratories of the Ministry of Health.

Laboratory Examinations at Cardiff.—On August 18th samples of stools were sent to the laboratory, collected from three of the patients—viz., A (M. P.), B (E. H.) and C (E. C.). Samples of vomit from three other patients—viz., D (M. C.), E (S. P.), and F (C. E.), were also submitted for examination. The only samples of food available which might possibly be regarded as associated with the outbreak were: (1) beef dripping, and (2) fish dripping. A bacteriological examination of these food samples for food-poisoning organisms gave negative results.

Examination of the Vomit.—Chemical examinations for preservatives and for arsenic or other poisonous metals gave negative results. From samples D and F a series of lactose bile-salt agar plate cultures gave non-lactose fermenting colonies in practically pure cultures. The fermentation characters and also the morphological and staining characters of several colonies from each of the samples were tested, and all conformed to those for food-poisoning organisms of the Salmonella group. Agglutination tests made with 24-hour agar cultures gave strong agglutination to a high dilution of *B. aertrycke* (Mutton), showing an agglutinating titre approximating to that of the specific organism, *B. aertrycke* (Mutton) used as a control. Negative results were given by cultures from both samples with standard *Bacillus enteritidis* Gaertner serum of an agglutinating titre of 100 units. The failure to isolate any food-poisoning organisms from sample E is probably to be attributed to the marked acidity of this sample.

Examination of Stools.—Samples A and B gave non-lactose fermenters, more numerous on plates after incubation with brilliant-green broth. Sample C gave negative results. A number of colonies isolated from samples A and B were fully examined, as in the case of samples D and F. The fermentation characters and also the agglutinating tests were identical with those obtained above. No absorption tests for specific organisms were made, but the results indicated a strong probability that the organism was of the *B. aertrycke* type.

Serological Tests.—On August 26th, allowing a period of ten days from the acute stage of the outbreak, a number of specimens of blood serum were collected from patients and staff. Specimens A, B, D, and F were from the patients M. P., E. H., M.C., and C. E. respectively, from whom a food-poisoning organism had previously been isolated. The sera were tested for agglutinating titre against the specific organisms and also with *B. aertrycke* (Mutton). The following were the highest dilutions showing marked agglutination :—

Serum.	Specific organism.	*B. aertrycke* (Mutton).
A	+1 in 500	+1 in 500
B	+1 in 500	+1 in 500
D	+1 in 1000	+1 in 500
F	+1 in 1000	+1 in 500

Samples of sera from two members of the staff gave weak reactions, but from three others negative results were obtained as follows :—

Serum.	Oragnism F.	*B. aertrycke* (Mutton).
No. 1 (J. M.), porter	+1 in 20	+1 in 20
No. 2 (W. F.), nurse	+1 in 100	+1 in 100
No. 3 (O. M.), „	−1 in 20	−1 in 20
No. 4 (E. F.), cook	−1 in 20	−1 in 20
No. 5 (E. W.), „	−1 in 20	−1 in 20

No absorption tests were made locally, but most of the above sera were examined at the laboratory of the Ministry of Health, and none showed any specific paratyphoid B agglutinin. The organisms isolated by us from cases A, B, D, and F, and also a culture of *B. aertrycke* (Mutton), were each tested for agglutination with a paratyphoid B serum up to a dilution of 1 in 1000. Organism A showed definite agglutination to 1 in 250, whilst organisms B, D, and F, and *B. aertrycke* agglutinated to 1 in 500 dilution.

Theories of Infection.

This outbreak is a good example of the difficulty often arising in tracing the origin of food poisoning even in what might appear at first sight to be the most favourable conditions. While it was possible to isolate the organism causing the infection, and to conclude from circumstantial evidence that the article of diet involved was minced meat, yet how the original meat or the mince became infected could not be determined. It is possible that the porter (J. M.) was infected from some outside source and casually contaminated the meat or mince, although no action of his could be traced which might account for the extensive contamination both of staff and patients' diets. His stools, examined rather late, were negative, but his blood was very weakly positive to *B. aertrycke*. The conduct of the institution made fly-contamination of the meat from the porter's stools or any other source unlikely, and inquiries in the district failed to reveal any cases in the households of persons supplied with the same meat as this porter. On the whole, he must be considered a very unlikely source of contamination. An interesting feature of the outbreak was that the maids of the hospital all had mince, but only one was affected, and that very slightly; neither did any of the night nurses suffer, and yet they all had the same minced meat as the day nurses. The suspect mince, however infected, was, of course, not served from one, but from several dishes. There was one dish for the day nurses, several small dishes for the night nurses, and one larger dish for the maids—all containing the mince in the form of shepherd's pie—while each ward had its own numbered dish containing ordinary minced meat and gravy. The mince may have become contaminated during mincing by the inclusion of infected portions of meat, these portions being localised in the dishes set apart for the day nurses and patients in the wards. The fact that scraps of salt beef and mutton were mixed with the

meat during mincing confuses the picture. These portions may have carried the infection and accounted for its random distribution. None of these had done any damage when consumed in the freshly cooked state. As they were the surplus of several days' diet, salted and kept in the larder, it was impossible to trace them to their source.

Summary.

In an outbreak of food poisoning in a hospital affecting 12 day nurses, 1 maid, and 25 patients, an organism of the Salmonella group was isolated from the fæces and vomit of a number of cases. Direct agglutination tests indicated that the organism was a member of the group having type agglutinins for *B. aertrycke* and *B. paratyphosus* B. The absence of specific agglutinins for *B. paratyphosus* B ruled out this organism as a causal agent, apart from the clinical evidence. The organism isolated from the vomited material and stools of several patients was agglutinated by the blood sera of these patients in high dilution. These sera also agglutinated *B. aertrycke*, but failed to agglutinate other organisms, including those of the enteric group. The conclusion from laboratory investigations conducted at Cardiff, confirmed by the bacteriologist to the Ministry of Health, is that the outbreak was due to a food-poisoning organism of the *B. aertrycke* type. The infection was contained in twice-cooked meat served either as mince or gravy, but how it gained access to the meat could not be ascertained.

We are indebted to Dr. R. M. F. Picken, medical officer of health, Cardiff, for kindly permitting us to publish these notes.

A CENSUS OF EPILEPTICS IN SURREY.

THE Permanent Committee on Epileptics, a body representative of the various voluntary agencies dealing with epilepsy, has recently reported on the number of epileptics known to the public authorities in the county of Surrey. Copies of the full report, containing various classification tables, are available on application to the Secretary of the Committee, 296, Vauxhall Bridge-road, London, S.W. 1. The following is an abstract of the report.

The usual estimate of the incidence of epilepsy, as given in the text-books, is 2 per 1000 of the population. This would mean that at the present time there are some 76,000 epileptics in England and Wales, but no one can say that this is even approximately correct; still less is it possible to give with any exactness the proportion of the sexes, the ages, or the mental conditions of these epileptics.

This lack of any exact knowledge is a serious obstacle in any attempt to deal with the problem of the epileptic. It is obviously impossible to take a census of the epileptics in the general community of even a small section of the country. It occurred, however, to the Permanent Committee that it would serve a useful purpose to endeavour to ascertain the numbers of epileptics known to the public authorities of one county area, and to obtain details of their age, sex, and mental condition. It is thought that from the figures thus obtained it should be possible to form some more or less reliable estimate of the numbers and types of epileptics who come under the care of the public authorities of the country as a whole.

The area chosen by the Committee is that of the administrative county of Surrey together with the county borough of Croydon. Questionaires have been addressed to all public authorities in that area, and replies have been received from all with the exception of the maternity and child welfare committees of three of the smaller districts. It may be claimed, therefore, that the figures are practically complete for the area covered by the inquiry. So far as possible overlapping between the various authorities in the supply of information has been avoided.

The Gross Numbers.

Table I. is a summary of the cases returned by the respective authorities:—

TABLE I.

Authority.	M.	F.	Total.
Mental hospitals	127	144	271
Poor-law guardians	135	126	261
Local education authorities	65	67	132
Mental deficiency authorities	27	22	49
Maternity and child welfare authorities ..	6	7	13
Totals	360	366	726

It had been hoped to include the figures of epileptic war pensioners in this census, but on inquiry it was found that it was impossible to separate the Surrey figures from those of the much larger area in which the county is included for statistical purposes by the Ministry of Pensions. It is understood, however, that there are now approximately 3000 officers and men in receipt of pensions and allowances in respect of epilepsy. The population of Surrey (including Croydon) is slightly under 2 per cent. of that of Great Britain and Ireland, and it has been assumed therefore that 55 may be taken as an approximate estimate of the epileptic pensioners in the former area.

The 726 cases of epilepsy included in the above table are equivalent to 0·75 per 1000 of the population of Surrey (including Croydon). If the 55 war pensioners, as estimated above, are added, the total of 781 is equivalent to 0·81 per 1000 of the population of that area.

Age and Mental Condition.

Table II. gives the age and mental condition of the 726 epileptics returned by the various authorities.

TABLE II.

Age-group.	Mentally normal.	Mentally deficient or feeble-minded.	Imbecile or idiot.	Insane.	Totals and percentage.
—* ..	3	—	—	—	3 (0·4)
0– 5 ..	9	3	5	—	17 (2·3)
6–10 ..	24	8	9	—	41 (5·6)
11–15 ..	44	20	21	—	85 (11·7)
16–20 ..	42	29	26	4	101 (13·9)
21–25 ..	21	8	18	12	59 (8·1)
26–30 ..	28	11	19	15	73 (10·1)
31–35 ..	13	12	20	24	69 (9·5)
36–40 ..	13	8	19	15	55 (7·6)
41–45 ..	15	8	7	13	43 (5·9)
46–50 ..	13	7	10	15	45 (6·2)
51–55 ..	10	3	4	16	33 (4·6)
56–60 ..	16	4	3	17	40 (5·5)
61–65 ..	3	4	4	8	19 (2·6)
66–70 ..	3	2	1	17	23 (3·2)
Over 70	8	3	3	6	20 (2·8)
Total ..	265 (36·5%)	130 (17·9%)	169 (23·3%)	162 (22·3%)	726

* Age not stated.

Of the 726 cases 515 (or 70·9 per cent.) are in institutions, the remaining 211 living at home. Fourteen cases are said to be blind as well as epileptic, 6 are dumb, 4 deaf, and 6 both deaf and dumb. Sixty-four cases are returned as crippled or paralysed, but these terms are so vague that the figure is of doubtful value.

It will be seen from Table I. that the number of male and female epileptics known to the various authorities is almost exactly equal. Sex seems to play no part in the incidence of the disease.

While youth and early middle life are most strongly represented, it is remarkable how the numbers of sufferers from epilepsy are maintained well into old age. If the generally accepted dictum be true that 80 per cent. of epileptics show manifestation of their disease before the age of 20, it would appear from this table that the expectation of life is greater than is supposed. Younger epileptics, of course, would have

a better chance of maintaining themselves, and thus keeping out of the scope of the inquiry, but even so the number of old people is rather surprising. Table II., however, makes it clear that the proportion of the insane among the older epileptics is very much higher. Nearly half of those over 50 are insane, while the incidence of insanity in the whole group is less than one-quarter.

The Authorities Concerned.

Feeble-minded children between the ages of 5 and 16 come under the care of local education authorities; feeble-minded persons of 16 or over and all imbeciles or idiots of whatever age should come under the care of mental deficiency authorities. It appears therefore from Table II. that the mental deficiency authorities have, or should have, the responsibility for 271 or 37·3 per cent. of the total number, while the corresponding figure for authorities acting under the Lunacy Acts is 162, or 22·3 per cent. The remaining 293, or 40·4 per cent. of the whole, are independent of either of these authorities. In other words, nearly one-half of all the epileptics known to the public authorities are quite outside the provisions of the Mental Deficiency or Lunacy Acts. Of these 293 epileptics, 96 are children between the ages of 5 and 16. These should be dealt with by the local education authority, and educated, as the circumstances demand, at public elementary schools, day special schools, or residential special schools. For the remaining 197 the only authority competent to give assistance or treatment would appear to be the poor-law authority.

It has been stated above that the mental deficiency authorities have, or should have, the care of 271 of the series of epileptics, or 37·3 per cent. of the total number. As a matter of fact it is found that only 49 cases are under their care, of whom 19 are in institutions and 30 not in institutions. Of all patients certified under the Mental Deficiency Acts it is probable that epileptics stand more in need of institutional treatment than any other class, and it is remarkable that three-fifths of even this small group are allowed to remain at home. Three of the 49, being feeble-minded children of school age, should really come under the local education authority, leaving a balance of 46. Where and under whose care are the remaining 225 out of the total of 271? 112 of them, all imbeciles or idiots, are in public mental hospitals, where they constitute, indeed, nearly half of the epileptic population; 108 of them are maintained by poor-law authorities, 4 are returned by maternity and child welfare committees, and 1 over school age is reported as known to a local education authority. The 108 maintained by poor-law authorities are distributed as follows:—

In epileptic institutions	47
In poor-law institutions	24
In other institutions	15
On outdoor relief	18
Boarded out	4

It will be clear, therefore, that less than one-fifth of the epileptics who should come under the mental deficiency authorities are in fact dealt with by them; the remainder are maintained in approximately equal numbers either in lunatic asylums or by poor-law authorities. It is useless to expect any alteration in this state of affairs unless and until there is very substantial increase in residential accommodation provided by the mental deficiency authorities. There are 19 epileptic imbeciles or idiots of various ages and 30 feeble-minded epileptics above school age who are not in institutions. It is probable that there are few households that can cope adequately with mentally deficient epileptics, especially those of the lower grades.

It appears that 62 epileptics of varying mental grades are dealt with in general poor-law institutions or infirmaries. Where these institutions are large and a special ward can be allotted to epileptics the arrangement may be open to little objection. But in smaller institutions, where these patients have to share wards with other inmates, it would be more desirable from their own point of view and certainly from the point of view of others that other accommodation should be provided for them, either in appropriate hospitals under the lunacy or mental deficiency authorities, or in epileptic colonies.

Children of School Age.

There are 124 children of school age in the series, of whom 67 are reported as mentally normal, 27 as feeble-minded, and 30 as of still lower grade of mental defect. Table III. shows the authorities who are dealing with these children and beside it a table showing how the children should be apportioned between the local education authority and mental deficiency authority.

TABLE III.

	Distribution.	
	Present	Suggested.
Local education authority	86	94
Mental deficiency authority	16	30
Mental hospitals	9	—
Poor-law authority	13	—

Of the 94 children who should be attending school there are:—

At elementary schools	46	(48·9%)
At residential schools for epileptics	19	(20·2%)
In other institutions	5	(5·3%)
Boarded out	1	(1·1%)
At no school or institution	23	(24·5%)

(Of the 23 children at no school or institution 14 are mentally normal and 9 are feeble-minded.)

Conclusions.

It has been stated above that, including war pensioners, it is estimated that there are 781 epileptics known to public authorities in Surrey. If from this total of 781 we deduct 154 epileptics who are not in institutions and not in receipt of outdoor relief the balance of 627 should represent the number who are chargeable in one form or another to public authorities. This total of 627 is equivalent to 0·65 per 1000 of the population of Surrey (including Croydon).

Assuming the incidence of epilepsy to be the same throughout the country a ratio of 0·65 per 1000 of the population would give an approximate total of 25,000 epileptics chargeable to the public authorities of England and Wales. On the basis of Table II. above the age-groups and mental condition of these 25,000 would be as follows (Table IV.).

TABLE IV.

Mental condition.	Age-groups.			
	0–5	6–15	16–70 and over.	Total.
Mentally normal	277	2,498	6,475	9,250
Mentally defective or feeble-minded	90	990	3,420	4,500
Imbecile or idiot	172	1,035	4,543	5,750
Insane	—	—	5,500	5,500
Total	539	4,523	19,938	25,000

It may be suggested that the survey was made in an area in which the public authorities are unusually active and progressive, and that the figures for the whole country, could they be ascertained on similar lines, would be smaller. It is certainly true that within the county area there are three special institutions for epileptics—viz., one at Woodmansterne maintained by the Surrey Joint Poor-law Committee for sane female epileptics, a general epileptic colony at Lingfield, and the Meath Home for women and girls at Godalming. There is, however, no evidence that the incidence of epilepsy is likely to vary in different parts of the country, or that it bears any relation to industrial or economic conditions or to density of population. It is considered fair, therefore, to state that on the basis of the figures obtained by this inquiry, the number of epileptics chargeable to the

public authorities of England and Wales approximates, or *should* approximate, 25,000.

Salient Points.

1. The sex incidence in the series of cases is equal.
2. The proportion of the insane rises rapidly in later years.
3. Only 60 per cent. of the epileptics who come under the notice of public authorities can be dealt with under the Mental Deficiency or Lunacy Acts; the remainder are "mentally normal."
4. The mental deficiency authorities deal with less than one-fifth of the cases coming within the scope of the Mental Deficiency Acts, the remainder being divided equally between the mental hospitals and the poor-law authorities. There appears to be a need for considerably more residential accommodation for epileptics certified and certifiable under the Mental Deficiency Acts.
5. 24·5 per cent. of educable children are at no school or institution.
6. It would appear that there are something like 25,000 epileptics chargeable to public authorities in England and Wales. The problem is, therefore, a large one, and it is submitted that the points that have arisen in connexion with this survey merit careful consideration.

BUCHAREST.

(FROM OUR OWN CORRESPONDENT.)

The Educational Treatment of Neurasthenia.

AT a recent meeting of the Medical Society of Bucharest Dr. Ramniceanu expressed the opinion that cases of neurasthenia were rapidly increasing in number. He showed that a definite percentage of the symptoms of a neurasthenic were illusory or hallucinatory in character, and claimed that practically every phase had one symptom, complaint, apprehension, or fear, which predominated over all the others. This one predominating symptom he called the chief obsession, and stated that when this was overcome or removed either by education, by medicinal treatment, or by psycho-analysis, all lesser symptoms were either abated or were entirely relieved. He cited a number of cases of neurasthenia from his own practice, giving the chief obsession in each case, and the educational or other means used to remove it. Reference was made to the use of some modern drugs in these cases; in Dr. Ramniceanu's view the majority of patients were made worse by their administration. It was essential to get hold of the mentality of each patient and to treat the mind rather than the body.

Poisoning by Wood Alcohol.

Dr. Olteanu describes in the *Spitalul* the case of a man of 34 who presented himself at the Central Hospital suffering from acute total blindness. Investigation of the history showed that the loss of sight had come on during the second day after taking about 50 c.cm. of corn brandy, which subsequent analysis showed to contain some 15 per cent. of wood alcohol. Symptoms which had accompanied the development of the eye condition included nausea, vomiting, weakness, cold extremities, and sensations of chilliness. On ophthalmoscopic examination the optic nerves presented the picture of a neuro-retinitis of moderate intensity, and in the macular regions were disposed numerous yellowish shining spots similar to those described as occurring in choroiditis guttata. Good food, warm baths, and large doses of potassium iodide were prescribed; four months later one eye showed complete recovery of function, and the other eye presented moderate concentric contraction of the field, considerable diminution of central vision, and impairment of colour vision.

Typhoid Fever in Children.

The differences between typhoid fever in children and in adults were recently reviewed by Dr. M. Edelmann in a communication to the Oradea Medical Society. Many of the 180 cases discussed showed the relation between vomiting and hæmorrhage first observed by Butler in the United States, especially those in whom vomiting had started at the onset of the illness and had been repeated. The appearance of the stools in very young children was not so characteristic as in adults, though in older children pea-soup stools often occurred. A preliminary constipation was shown to have no evil significance. Rose spots occurred in 52 per cent. of all cases, and herpes in three cases, two of which had complications. The average duration of the fever was 18 days, a much shorter period than is customary in adults. The usual parallelism between the pulse and the temperature was not present in very young children. Leucopenia was mostly present and the Widal test was positive in nearly all cases where it was performed. Relapses were more frequent than in adults, especially in girls. The mortality in the series of cases was 7 per cent., and was twice as high in relapses as in original attacks.

The Improvement of School Hygiene.

A movement is on foot for a great extension of the present methods of medical school inspection. It is championed by Dr. A. M. Marinescu who suggests the establishment of national, State, and local boards of school hygiene under the direction of specially qualified medical officers. Most of the bad conditions now existing he ascribed to the ignorance of school boards, of parents, and the children themselves. The functions of a national board would be to provide plans for sanitary school buildings and school furnishings, to conduct civil service examinations for school physicians, and to publish leaflets of instruction from time to time. The State boards should have the power to choose proper sites for schools, to frame and enforce laws governing school hygiene, to close insanitary school buildings, to ensure the exclusion of degenerate or criminal children from State schools, and to keep records of the progress and development of school-children of the State. The local board should consist of business men and physicians, should keep records, and should keep in touch with the national and State boards from time to time. Under this scheme every child in each school would undergo a complete physical examination. The functions of the board would also include the distribution of literature bearing on hygiene and also the instruction of parents as to the needs of each child, based on its physical examination.

RADIUM AT THE LONDON HOSPITAL.—At the quarterly court of governors last week it was reported that in response to urgent representations from the medical and surgical staff, the purchase of 210 mg. of radium for the treatment of cancer had been authorised, in addition to the 121 mg. already possessed. This amount, with the containers, will cost £2854. Last year more than 800 cancer cases were treated as in-patients and very many more as out-patients. Disappointment was expressed at the result of the quinquennial appeal, which has, so far, produced only £95,000. Last year 10,271 patients were admitted from London boroughs, and about 6000 from other parts of the country, including the Channel Islands.

ST. THOMAS'S HOSPITAL.—In his annual report, the treasurer, Sir Arthur Stanley, states that the number of in-patients last year was 11,510, who stayed, on the average, 18 days at a cost per head of £11 11*s.* 9*d.* New out-patients numbered 92,325, of whom 57,047 were casualty patients. They made 580,356 attendances and cost a fraction under 12*s.* 2*d.* each. The income was £190,000, of which investments produced £69,000, and the expenditure £183,000. Referring to the suggested coöperation of the voluntary hospitals with the public authorities in providing a medical service adequate to the needs of the community, Sir Arthur Stanley expresses the hope that nothing may be done that will interfere in any way with the autonomy of the voluntary hospital "which has proved of such immense value in furthering improvement in general methods of treatment, in research, in nursing, and n social service."

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT CARDIFF.

(*Continued from p. 525.*)

SECTION OF DISEASES OF CHILDREN.

UNDER the presidency of Dr. ALFRED HOWELL (Cardiff) a discussion on

CHRONIC SPLENOMEGALY IN CHILDHOOD,

its Diagnosis and Treatment, was introduced by Dr. ROBERT HUTCHISON (London), who said that before proceeding to the differential diagnosis of the various splenomegalies of childhood it was advisable to make sure that the abdominal tumour in question really was an enlarged spleen. Usually this was easy enough, but sometimes there was a doubt, especially as to the possibility of the tumour being an enlarged left kidney or suprarenal. Having settled that the tumour was really an enlarged spleen it was necessary to have some sort of classification of the different varieties of splenomegaly met with in childhood. An ætiological classification was the only satisfactory one, but was impossible in the present state of our knowledge and, therefore, for purposes of discussion, he proposed to consider the subject under certain broad groups.

Tumours were very rare and for practical purposes undiagnosable.

Chronic Infections.—In tuberculosis splenomegaly was unlikely to be the "presenting sign." The relation of congenital syphilis to splenomegaly was very important, but he suggested for the purpose of discussion that its frequency as a factor in causing that condition was exaggerated. In pre-Wassermann days the tendency was to ascribe every splenomegaly of doubtful origin to syphilis. It had been suggested by Dr. Parkes Weber and others that an inherited taint might form a basis on which enlargement of the spleen—though not primarily due to syphilis—might develop more easily than in a normal child. Such a view appeared very speculative. In cases of syphilitic splenomegaly in which vigorous antisyphilitic treatment did not produce any diminution in the size of the spleen splenectomy was indicated. Lymphadenoma as a cause of enlargement of the spleen without any evidence of the disease in the glands was very rare, and he did not see how it could be diagnosed with certainty. Chronic sepsis had been put forward as a cause of splenomegaly as of most things. That splenomegaly might be the presenting sign in cases of very chronic infective endocarditis (endocarditis lenta) was certain, but he doubted if cases of that very chronic type were ever met with in childhood.

Tropical splenomegalies such as malaria and kala-azar presented no difference from the adult form.

Splenomegaly in Metabolic Disease.—The part played by rickets in causing enlargement of the spleen had been as much exaggerated as the rôle of syphilis. Severe rickets certainly led to some enlargement of the spleen, but in some cases the organ was not so much enlarged as pushed down by the deformity of the ribs.

Gaucher's disease was rare, although not so rare as usually believed. Opinions as to the value of splenectomy were divided. The operation could not be regarded as a cure because the disease affected the whole of the reticulo-endothelial system, but if the tumour was causing discomfort its removal appeared to be justified.

Splenomegaly in Diseases of the Blood.—This group included the leukæmias, splenic anæmia of infancy (von Jaksch's disease), acholuric jaundice, purpura, and erythræmia. Splenic anæmia of infancy used to be relatively common, but had become rare in recent years. In considering its treatment it must be remembered that the disease tended to spontaneous recovery given suitable hygienic measures, and he did not consider that splenectomy was ever called for. Acholuric jaundice was now recognised to be of not uncommon occurrence; its diagnosis could be established with certainty and splenectomy was the only effective method of treatment.

Splenomegaly associated with Cirrhosis of the Liver.—Excluding Banti's disease three forms could be distinguished. First, an idiopathic, non-alcoholic progressive cirrhosis (Parkes Weber) of unknown cause which resembled the ordinary portal cirrhosis of adults, ran a fairly rapid course, and often terminated in hæmatemesis. There was always some enlargement of the spleen, but in some cases this was the "presenting" sign, and such cases had been spoken of as cirrhosis with "splenic predominance." The diagnosis from Banti's disease was not easy, and some writers—J. H. Thursfield, for example—maintained that splenectomy was almost invariably fatal, but he was not at all sure that such a view was correct. Secondly, a syphilitic cirrhosis with splenomegaly was met with in later childhood and did not always give a positive Wassermann reaction. Splenectomy might be justified if antisyphilitic treatment failed. And thirdly, splenomegaly with biliary cirrhosis (Gilbert and Fournier), believed to be the form which Hanot's cirrhosis took in the child. He was very sceptical as to the occurrence of Hanot's cirrhosis at all, and still more sceptical as to its occurrence in childhood.

Splenomegaly the Result of Splenic Thrombosis.—Wallgren had drawn attention to thrombosis of the splenic vein as a cause of splenomegaly in childhood, and believed that it was commoner than supposed, but was usually confused with Banti's disease. The leading features of the syndrome were splenomegaly, anæmia with leucopenia, and slight ascites. Sooner or later hæmatemesis set in, and after a bleeding the volume of the spleen shrank and a temporary leucocytosis occurred. The liver in all the cases which came to autopsy was found to be normal. The prognosis of these cases was bad unless splenectomy was performed.

Splenic anæmia of adult type and *Banti's disease* were to some extent diagnostic rag-bags. Seeing that the splenic anæmia of adults was a very prolonged disease, the final stage of which was only reached after some years, it followed that the full syndrome was not likely to be met with whilst the patient was still a child, but in spite of this he thought the diagnosis in childhood of Banti's disease was sometimes justified. The difficulty was to distinguish this disease from cases of idiopathic cirrhosis "with splenic predominance," and this could only be done if the history showed that the spleen had been enlarged for some years before signs of cirrhosis supervened. It was sometimes asserted that the presence of leucopenia put a case in the category of splenic anæmia rather than of idiopathic cirrhosis, but with this statement he could not agree because in his view leucopenia tended to be a feature of most chronic splenomegalies. The treatment for splenic anæmia of the adult type was splenectomy, but it was a matter for discussion as to whether the operation was worth doing after cirrhosis had supervened.

With regard to treatment, debate, said Dr. Hutchison, must chiefly centre round the question of splenectomy. He agreed with Parsons that the cases suitable for operation were those which showed a negative Wassermann reaction, no enlargement of the lymph glands and no characteristic leucocytic picture, but in which there was some degree of anæmia, associated with (1) leucopenia, or (2) increased fragility of the red cells, or (3) hæmatemesis. There might, however, be differences of opinion as to the advisability of splenectomy in Gaucher's disease and in cases of cirrhosis of the liver whether of the idiopathic or Banti variety, even although these fell within the limits of the above criteria.

Discussion.

Mr. L. E. BARRINGTON-WARD (London) said that from the surgical standpoint enlargements of the spleen fell into two categories. In the one group removal of the spleen cured the disease or produced a definite amelioration of symptoms; in the other splenectomy offered some hope of improvement, but without any prospect of producing a real cure. In the first class could be placed acholuric jaundice and

thrombo-cytopenic purpura. The second class was made up of more debatable material, but he advocated early splenectomy in Banti's disease before ascites developed. In Gaucher's disease if the spleen were large and producing abdominal discomfort he thought removal should be practised. Splenomegaly due to thrombosis of the splenic vein was difficult to diagnose and could only be recognised with certainty at operation or autopsy. The difficulties of splenectomy in this condition were very great. With regard to the operation of splenectomy blood transfusion was essential both before and after operation. He had not had any experience of preliminary irradiation of the spleen in children, but this procedure had been well spoken of in leukæmia by W. S. Mayo. Gas and oxygen was the anæsthetic of choice. Happily the common conditions, for which removal of the spleen was required in children, presented no great difficulties.

Prof. LEONARD FINDLAY (Glasgow) pointed out that it was only possible to estimate the palpability and not the size of the spleen, because conditions such as hypernephroma, retroperitoneal sarcoma, enlargement of the liver, or a deformed chest would displace an enlarged spleen. He agreed with the opener that there was not any enlargement of the spleen in rickets unless that disease was complicated by tuberculosis, syphilis, or severe thoracic deformity. He had on one occasion found a palpable spleen as the only evidence of tuberculosis, but the diagnosis was only made as the result of splenic puncture, and he had also seen a case of lymphadenoma in which, except for anæmia, splenomegaly was the only manifestation of the disease, the diagnosis being made at autopsy. Whilst he agreed that the incidence of congenital syphilis had been overestimated yet in the presence of anæmia and splenomegaly that disease must be eliminated by a negative Wassermann reaction. Splenectomy did not interfere with the course of von Jaksch's anæmia, but after splenectomy in that disease the number of leucocytes diminished whereas they increased after splenectomy for other conditions. Of the two cases quoted by Dr. Hutchison as examples of cirrhosis of the liver with splenic predominance and Banti's disease respectively, he thought that either case might do for either condition. There was a great deal of confusion about Banti's disease, but Banti himself had stated specifically that cirrhosis of the liver was present in the early stages of the disease; there should, however, be no confusion as to the methods of arriving at the diagnosis of the cause of an enlarged spleen, which were: a complete blood count, an estimation of the fragility of the red cells, a Wassermann reaction, and splenic puncture. Without splenic puncture it was impossible to separate Banti's from Gaucher's or Hodgkin's disease, tuberculosis, &c.

Dr. C. P. LAPAGE (Manchester) in his remarks dealt chiefly with cases of Jaksch's anæmia which had been under his care. The frequency of this disease, which occurred chiefly in the artisan classes, had diminished considerably but was now increasing again. Two cases had occurred in one child of each of two pairs of twins. Many had suffered from digestive disorders and many showed signs of rickets. He did not consider the latter a causal factor nor was there anything to suggest that the disease was due to syphilis. The blood showed a secondary anæmia which varied from time to time. He had been able to follow up some of his cases and all of those examined were in ordinary health, the blood and spleen being normal. He hesitated to recommend splenectomy and thought that in all cases arsenic, benzene, and, perhaps, liver extract should be tried first, but if the child was not very ill and the course of the disease a protracted one, splenectomy was advisable.

Dr. J. WILKIE SCOTT (Nottingham) said that in cases with splenomegaly and hæmatemesis he found it difficult to differentiate splenic thrombosis from cirrhosis of the liver. He had recently seen two patients who when apparently healthy had an acute hæmatemesis followed by a rise of temperature and slight ascites. In both instances splenectomy was performed with successful results. Thrombosis of the splenic vein was not found at operation, and he thought the hæmatemesis was due to an active and not a passive hyperæmia, possibly caused by a perisplenitis.

Dr. HILDA STOESSIGER (London) described a case of Banti's disease occurring in a boy aged 14. The patient had suffered from abdominal discomfort due to the presence of an enlarged spleen for some months; there was slight anæmia with leucopenia and the Wassermann reaction was negative. A lævulose tolerance test showed marked hepatic insufficiency. Splenectomy was performed and at operation the liver was noted to be cirrhosed. Two years later the patient was well, but the onset of puberty was delayed. The liver was enlarged and still showed marked inefficiency.

Dr. LEONARD G. PARSONS (Birmingham) agreed that the diagnosis of an enlarged spleen might be difficult and quoted a case in which a mass of tuberculous glands presented under the left costal margin and showed typical splenic notches. He had listened with great interest to Dr. Hutchison's remarks on the differentiation of Banti's diseases from cirrhosis of the liver with splenic predominance, and he agreed with Prof. Findlay's criticism of the cases quoted. As far as he (Dr. Parsons) could judge the only point of difference between the two conditions was that the cases of "splenic predominance" ran a more rapid course than those of Banti's disease. Splenomegaly with thrombosis of the splenic vein described by Walgren was not mentioned as a cause of enlarged spleen in the discussion on this subject at the Royal Society of Medicine in 1925, but two of the cases described by him (the speaker) as instances of Banti's disease had been claimed as examples of the Walgren type. He asked whether Mr. Barrington-Ward recommended the removal of spleniculi if found during the operation of splenectomy in acholuric jaundice and if the gall-bladder should be examined for gall-stones, as recommended by Sir Berkeley Moynihan.

Dr. E. A. COCKAYNE (London) pointed out that although removal of the spleen for acholuric jaundice cured the symptoms, yet it did not cure the disease. He asked if irradiation of the spleen had any curative effect on this disease, and also if this method of treatment produced adhesions and thereby rendered any subsequent operation more dangerous. Splenic anæmia of the adult type, if diagnosed, should be treated by removal of the spleen because it was a primary splenic disease, but there was no method of accurately diagnosing the condition. Some cases of cirrhosis of the liver ran a very protracted course and this, he thought, accounted for some of the supposed cures of hepatic cirrhosis after splenectomy. Since hepatic cirrhosis was a primary liver disease a cure could not be expected by performing splenectomy.

The PRESIDENT said that occasionally patients suffering from acholuric jaundice showed a normal red-cell fragility. He also referred to the occurrence of pigmentary concretions in the gall-bladder in this disease, pointing out that Mayo had found these in three out of five cases.

Reply.

Dr. HUTCHISON said he quite realised the difficulty in deciding into which category a case should be put, but if the splenic enlargement had been known to be present for some years before cirrhosis of the liver developed the case should not be classed as one of idiopathic cirrhosis.

CHRONIC NEPHRITIS IN CHILDHOOD.

The subject was opened by Dr. J. C. SPENCE (Newcastle-on-Tyne), who said that from the standpoint of morbid anatomy there were no forms of chronic nephritis which were peculiar to childhood, but there were certain clinical features about the disease in children which deserved attention and which might throw some light on some of the obscure problems of the subject. For the purposes of description and discussion it was necessary to attempt some form of classification. Three main groups of the condition occurred in childhood, and these differed

from each other very widely and were best considered as separate diseases. These were: (*a*) chronic interstitial nephritis; (*b*) chronic parenchymatous nephritis, including nephrosis; and (*c*) chronic ascending pyelonephritis. It was true that the latter was not a primary disease of the kidney, but it impaired the renal function in the same way as chronic interstitial nephritis and so was likely to be mistaken for it. Chronic hæmorrhagic nephritis was not included because such cases were probably recurrent attacks of slight acute glomerular nephritis.

Chronic interstitial nephritis was at one time regarded as a great clinical rarity and Leonard Guthrie, in 1896, could only collect seven cases under the age of 14; since 1911, however, when Fletcher, Parsons, and Miller drew attention to the fact that the disease might result in peculiar bony changes and dwarfism, a great number of cases had been recognised. He believed that there were three clinical types of this condition in children. There were, however, certain symptoms common to them all. The symptoms might arise from infancy onwards, but usually advice was not sought for several years, and then a history of thirst, polyuria, anæmia, and arrested development could be obtained. On the other hand, an attack of uræmia might be the first warning of the condition. In well-established cases the patients were usually emaciated, with coarse, dry, and pigmented skins, and were liable to repeated attacks of uræmic vomiting and headaches. There was no mental defect. If dwarfism and bone changes were present they might be of an extreme degree. Bone changes were not likely to appear in those cases which ran a rapid course towards a terminal uræmia, but only in those which ran a long course and in which the renal function was much impaired. Polyuria was a prominent symptom. The amount of albumin was variable and often so slight as to be overlooked. Casts, leucocytes, and red cells were to be found in the urine. The blood pressure might be normal throughout, high throughout, or become so during the course of the disease. Renal retinitis might be absent throughout, even although the patient died in uræmia. Renal function tests demonstrated great loss of function in all cases of "renal dwarfism" and "renal rickets." It was on certain combinations of these symptoms and signs that he proposed to divide cases of chronic interstitial nephritis into three types.

Type 1.—A primary renal type without history of acute nephritis, or preceding sepsis. The chief features of this type were that the onset of the disease was unrecognisable, that it had a slow course, and that renal dwarfism developed. There was marked azotæmic nephritis, the blood pressure usually remained normal, and retinitis was not present. Attacks of tetany might occur, and the terminal uræmia was that described as true azotæmic nephritis, an undramatic picture of muscular twitchings, vomiting, and coma.

Type 2.—A primary renal type with a history of acute glomerular nephritis, or prolonged sepsis. In these cases within a few years of the initial illness there was found a high blood pressure (150 to 200 mm.), cardiac hypertrophy, albuminuria, with numbers of red cells in the urine, azotæmia, and retinitis. The course of the disease in these cases was usually a rapid one.

Type 3.—A primary arterio-sclerotic type with secondary contraction of the kidneys. Cases in this group showed a preliminary stage of high blood pressure which was often found to be over 200 mm. when the patient was first seen. The blood urea was, however, normal and there was only a mere trace of albumin in the urine. Later there was cardiac hypertrophy, retinitis, and a tendency to "uræmia of the cerebral type," with transient amaurosis, monoplegia, and convulsions. Later still albuminuria and some azotæmia developed, and death occurred from heart failure or apoplexy.

Renal rickets and tetany in chronic nephritis were the result of a metabolic disturbance which accompanied azotæmic nephritis, but which did not yield to the usual antirachitic remedies; indeed, one of his cases was thrown into uræmia after exposure to ultra-violet ray treatment. Frank tetany was not common, but in many cases latent tetany could be demonstrated by the presence of Chvostek's sign. In azotæmic nephritis there was a retention of phosphorus and often a fall in the calcium of the blood, but in some cases of renal rickets the fall in blood calcium did not occur. It was reasonable to believe that the bony changes and the tetany which might be present were dependent on the disturbance of the phosphorus-calcium ratio of the blood and tissue fluids.

Chronic parenchymatous nephritis or nephrosis was the commonest form of chronic nephritis. Müller coined the term "nephrosis" in 1905, maintaining that the kidney lesion was a degeneration and not an inflammation. Now it appeared that the disease was not primarily a kidney disease at all, but a general disease with "an abnormal permeability of the cutaneous and renal vessels for albumins and lipoids referable to changes of metabolism," so the most recent fashion was to call it "lipoid dystrophy of the kidneys." The only evidence that the clinical condition was due to a disease of the kidneys was the occurrence of albuminuria and casts in the urine, but there were cases on record in which the œdema preceded the urinary findings. Some held that the œdema was due to the retention of chloride, but de Wesselow had shown that the kidneys were quite capable of passing and concentrating the chlorides if they were given the opportunity. These cases rarely ran an uncomplicated course and were peculiarly liable to secondary infections, and at such times a glomerulitis with hæmaturia and nitrogen retention were superimposed. With regard to treatment, Marriott maintained that the disease was due to a toxin which damaged the tissue cells, causing them to absorb more chloride from the blood, so producing œdema. The toxin was usually the result of a staphylococcal infection of the mastoid or paranasal sinuses, and therefore this writer advised a very thorough examination and exploration of these sites and reported rapid cures after sinus drainage. Osman had revived the using of large doses of alkalis as a method of treatment, and this should be tried in obstinate cases, but it should be remembered that it often produced severe vomiting and tetany. The disease was so liable to fluctuations that it was difficult to assess the value of any particular form of treatment, but it was commonly agreed that a high protein diet was beneficial, that decapsulation of the kidney was useless, and that it was imperative that every patient with nephrosis should be guarded rigidly against the development of intercurrent infections in case an acute hæmorrhagic nephritis developed.

Chronic Ascending Pyelonephritis.—Most cases of acute pyelitis, if promptly diagnosed and treated, made a satisfactory recovery, but there were more chronic cases which remained in ill-health and were liable to recurrences of fever and pyuria. In a few of the latter a permanent damage of the kidney resulted and the failure in renal function showed itself as an advancing azotæmic nephritis ending in uræmia. If the condition was sufficiently prolonged these patients developed renal dwarfism. In such instances the question as to whether there was some chronic obstruction or deformity of the urinary tract which was the cause of the infection must be considered. One of the most striking examples of ascending pyelonephritis was due to a valvular obstruction in the posterior urethra of male children, of which quite a considerable number of cases had now been diagnosed and successfully treated.

Discussion.

Dr. NORMAN B. CAPON (Liverpool) said he wished to lay down two propositions. First, that in any particular case of nephritis the lesions were diffuse; and, secondly, that the renal efficiency tests were not of very great assistance and were of little real value in treatment. Every case of chronic nephritis represented a kidney which was the seat of repeated acute attacks. Emerson had pointed out that chronic nephritis was not the result of one, but of a thousand and one acute attacks. The treatment of chronic nephritis in general was a dismal thing, but in the treatment of chronic hæmorrhagic nephritis—the commonest form of nephritis—there was a little more ground for hope. Effective treatment of tonsils, teeth, or any other infective focus did more to allay

the course of the disease and limit the number of recurrences than any other method.

Dr. COCKAYNE, who was in the chair, stressed the importance of discussing treatment because if, for instance, nephrosis was due to infection it obviously could be effectively treated.

Dr. PARSONS pointed out that in one type of renal rickets—the "stippled" type—primary optic atrophy was not uncommon and was probably the result of pinching of the optic nerve in the foramen. With regard to the suggestion that the parathyroids might be connected with the bone changes and the absence of tetany, the Section might be interested to know that he had given parathyroid hormone for some time to a child suffering from "renal rickets" with the result that her blood calcium was raised to a higher level, and in the radiogram the rickets appeared to be increased. Owing to the normal variations of the disease, however, it was not possible to say whether this was cause and effect. It was, however, clear that the hormone should not be used in the treatment of tetany in renal rickets, and it was also important to avoid making use of acid sodium phosphate because this drug was likely to produce an attack of tetany in these children.

Dr. HUTCHISON said that Dr. Spence was particularly well fitted to open the discussion because he was a biochemist as well as a physician. The difficulty in discussing the subject was the question of classification because the more chronic was the case the more likely were the lesions to be diffuse. He wondered whether the primary renal type was a true renal disease. Might not the renal changes and the rickets be both manifestations of a metabolic disorder? He had never seen the primary arterio-sclerotic type in a child, and he doubted whether the condition was, as generally stated, a primary vascular disease with secondary renal changes, and he suggested that the glomeruli at least were affected. He noticed that the opener had not said much about casts in the urine, and he asked if any importance was to be attached to these because he himself thought that granular and blood casts were of great importance. He did not believe that staphylococcal infections were the cause of chronic parenchymatous nephritis, nor had he ever known decapsulation of the kidneys do any good. Quite dramatic results, however, sometimes occurred in that disorder as a result of tapping if the œdema was very marked. In many cases after treatment by dieting and diuretics had failed, tapping not only removed the fluid but a spontaneous diuresis had occurred and the dropsy did not return.

Dr. WILKIE SCOTT said he had recently had two cases of the arterio-sclerotic type which threw some light on the cause of that condition. Both cases had retinal changes and normal blood urea, and both at the onset had hæmaturia, a fact which suggested that this type was the result of an acute, perhaps slight, hæmorrhagic nephritis. He had been impressed with the number of times a slight hæmaturia was found in patients who were in hospital for nasal disorders, and which was only discovered by routine examination. He also quoted another case in which there was marked œdema and ascites but no albuminuria until within a day or two of the child's death, and at the autopsy the kidney showed the lesion of a typical chronic parenchymatous nephritis.

Dr. LAPAGE was convinced of the septic origin of many cases of chronic nephritis, and that not enough attention was paid to dieting. Many cases were kept on too low a diet, thereby preventing recovery.

Dr. D. T. DAVIES (Cardiff) agreed that the study of uræmia in childhood was one that promised to be of great value. In the primary renal type there was a conspicuous absence of respiratory symptoms, and also for long periods of time the blood urea was high, even as high as 300 mg. per cent., without any symptoms of uræmia. When uræmia occurred vomiting was a marked symptom, and this was one method of excreting urea, for he had found as much as 600 to 800 mg. per cent. in the vomitus. Another point to remember was that osseous changes were not invariably present.

Dr. A. MONCRIEFF (London) said that there were two ætiological factors in chronic nephritis—the vascular and the infective. The vascular factor had been emphasised by Volhard, who said that the glomerular vessels were affected in exactly the same way as the vessels of the skin by chill. The vessels contracted, nutrition was cut off, and death and degeneration followed by fibrosis occurred. Infection caused kidney damage in one of two ways: streptococcal emboli might affect the glomeruli producing acute hæmorrhagic nephritis, or toxins might affect the tubules and produce a chronic parenchymatous nephritis. The vascular cases were difficult to treat, but it might be possible to do something for the infective ones. It should be remembered that in lipoid nephrosis the kidney was choked with fat, which interfered with filtration just as filter paper when soaked in fat delayed filtration; therefore it was essential to give a low fat diet in the treatment of this disease.

Dr. HOWELL quoted a case of the primary renal type which had recently been under his care and which had died from uræmia. This case was sent up to the orthopædic department for treatment of knock-knee and showed other evidence of renal rickets. The optic discs in this case were pale, although he could not say that there was any actual atrophy.

Dr. H. GAINSBOROUGH (London) said he disliked the term "lipoid nephrosis" because he did not know what a "lipoid" was. Nor did he see any reason for giving a fat-free diet in cases of this disorder, because cholesterol was not a fat.

SECTION OF RADIOLOGY AND PHYSIO-THERAPEUTICS.

ULTRA-VIOLET LIGHT AND THE GENERAL PUBLIC.

Prof. W. E. DIXON (Cambridge) outlined the nature of radiation and said the different rays so far as they have been mapped extended through 62 octaves. Visible sun rays occupy only one octave. Beyond the violet rays of visible light are five octaves of ultra-violet rays which are invisible. Solar radiation contains a few of these, something less than one octave. On the other side of the solar spectrum are the infra-red rays, about seven octaves, of which solar radiation contains three or four. Sun rays have been used in the treatment of disease for long ages, but during the last 30 years precise observations have been made of their action in disease. The proof is complete that they exert a curative action in cases of surgical tuberculosis, rickets, and in some cases of nerve disease, anæmia, and skin disease, but atmospheric conditions alter the action of sunshine to some extent. Thus, the presence of water vapour acts in much the same way as a fire screen which lets us see the fire but cuts out the heat.

It is generally believed, said Prof. Dixon, that it is the violet and longer ultra-violet rays that possess the greatest curative value, because these are especially prevalent in the sunshine of mountainous districts and near the sea where they become refracted and reflected by the sand and water. If the short ultra-violet rays were the most important, then the mercury-vapour lamp, in which they are very rich, ought to be the most effective treatment. Rollier, the pioneer of sunshine treatment, regards the light waves as the most important, and abundant pigmentation as a sign that the patient is deriving benefit. Others believe that the value of heliotherapy is the direct effect of the power of the rays to produce redness of the skin. All skin contains a substance called ergosterol; when this is acted on by ultra-violet rays it is changed chemically and the changed substance acts as a preventive and a cure for rickets. So that in this particular instance ultra-violet is all-important. Regarding general benefit, however, all we know for certain is that sunshine exerts a curative action in certain diseases, and that this is not due

to the action on the disease directly, but to an action on the skin, and only indirectly on the disease. In the various lamps employed for the artificial production of ultra-violet rays the spectral distribution varies greatly. Sunlight at sea-level contains less than 2 per cent. ultra-violet rays, but in a water-cooled mercury-vapour lamp the ultra-violet rays may rise to 50 per cent., and the spectral quality is different from that of the sun in that it contains a large proportion of the short and more physiologically active waves, so that with such an artificial source the skin is subjected to rays of a quality foreign to natural sunshine. In his opinion the carbon arc was the nearest approach to the natural sun. Sunlight, ultra-violet rays, and infra-red rays all cause the skin to turn red at first, and if the dose is repeated or prolonged to become pigmented later. Pigmentation from lamps is more superficial and transient than that produced by sunshine. Apart from its action on the skin, ultra-violet radiation gives a feeling of well-being and vigour. Many other effects on metabolism have been ascribed to ultra-violet rays, but he did not believe they were specific. The skins of patients differ in their reactions towards light, due probably to the presence of a sensitiser. But quite apart from this natural sensitiveness the condition can be acquired. The application of powerful ultra-violet rays alter the proteins of the skin. These abnormal proteins are absorbed, and an allergic condition arises in which the skin becomes intolerant to light. Thus, the importance of correct dosage cannot be over-exaggerated, since burns may lead to light allergy.

Much of the literature in the advertisements on lamps leaves the impression that they are a panacea for all disease. In reality, very many patients are not benefited by this treatment, and some may suffer injury. The radiations from ultra-violet lamps, which emit rays of shorter wave-length than those found in the solar spectrum, when applied to the skin, are just as foreign to the body as to be comparable with the administration of a poisonous drug; either may be beneficial in a suitable subject but harmful in an unsuitable. Few of us would dare to have a prescription containing poisons dispensed by an untrained person, but the dispensers of rays are uncontrolled, unregistered, and may be unqualified. At the present time all kinds of rays are used by charlatans in Europe and America to impose on the public. Sun ray institutes are becoming the fashion, and the public is buying machines and indulging in self-treatment. Already action has been taken in France and America, and an endeavour is being made to control this form of treatment and prevent its indiscriminate use, and he thought it was obviously right that the public in this country should be given such information as will enable them to distinguish between those who have been properly educated to dispense rays, and others.

"I have endeavoured," said Prof. Dixon, "to show that treatment by radiation may be either beneficial or harmful; that its employment by unskilled people may cause serious ill-effects to the patient, and that the time has come when some sort of protection must be extended to the public."

Dr. C. B. HEALD (London) said there was ample evidence that electrical treatments could do harm; and he commended the resolution passed by the Representative Body a few days previously.[1] He instanced cases where fatalities had occurred with much lower voltages than those in general therapeutic use. With regard to the ignorant applications of X rays and radium, it was not necessary for him to dwell on the dangers both to patient and operator. But he pointed out that special courses and diplomas in radiology and electrotherapeutics for medical men had been instituted, and the possession of such a diploma was essential in many hospitals for the appointment of radiologist. Coming to ultra-violet light, he said an argument sometimes advanced is: "Control X rays, radium, and obviously dangerous things like that if you like, but surely no one can do much harm with an ultra-violet lamp. At the worst, all that can happen is an uncomfortable sunburn." That idea he most strongly condemned. Prof. Dixon had shown the dangers of ultra-violet radiation, and public interest demanded imperatively that it should only be used by trained and experienced persons. He had examined the evidence of damage by ultra-violet light treatment from the contributions of many writers. He mentioned three of the ailments that had been adversely affected—quiescent phthisis, arterio-sclerosis, and chronic nephritis—and asked how the unqualified therapist was to recognise these conditions. Many of the contra-indications to ultra-violet treatment are such that the qualified doctor finds it hard to detect their presence, and there was certainly not the least hope of the unqualified detecting them before damage was done. He thought the formation of a roll or register of persons regarded by a competent authority as suitably qualified to administer medical electricity as a matter of urgency. It would enable those of the public who cared for their own safety to be sure of their therapist. It would also be of great value to doctors who would thus be able to select a suitable assistant to whom to send their cases. The duly qualified among the medical electricians would welcome it, if for no other reason than that it would protect them from the unfair competition, backed by advertisement, of those who have spent neither time nor money in acquiring skill and experience and who are not bound by any ethical rule of modesty or truthfulness.

[1] See THE LANCET, July 28th, p. 194.

Discussion.

Dr. OWEN L. RHYS (Cardiff), who presided, thought the most striking point brought out by the introducers was that here was an agent with potentialities of danger still largely unknown.

Dr. A. J. H. ILES (Taunton) said that a penal clause regarding unqualified practice should certainly be imposed and that it should be also made illegal for a registered electrotherapeutist to employ people who themselves were not qualified. It should also be made clear that if a medical practitioner sent his cases to an unqualified electrotherapeutist he would be responsible if any damage resulted.

Dr. MARIA ARMSTRONG (Ballymena) asked how far responsibility rested with the prescribing physician. In a cottage hospital with which she was connected, "artificial sunlight" lamps had been instituted, and the committee had thought that the treatment might be in the hands of the masseuse, who, by her own admission, knew nothing about light treatment and was not even qualified in electricity. The doctors, however, had refused to allow the treatment to be placed in the hands of this woman, or to be responsible for mistakes made by her.

Dr. P. W. HAMOND (Croydon) said that this matter had been discussed in the Representative Meeting, and the conclusion arrived at was that no absolute rule could be laid down, and that if legal proceedings resulted, each case would have to be decided according to the circumstances.

Dr. GARFIELD EVANS (Cardiff) considered that there should be a definite course of training undertaken by the people who were going to administer light treatment, and that a register should be set up.

Dr. T. MARLIN (London) said that he had refused to instal a mercury-vapour lamp (although it was very convenient for treatment) because he felt that this was an agent of which so little was known.

In reply to a question as to whether the proposed registrants would be required to be medical men or qualified physicists, Dr. HEALD said that, in his view, a registrant should be required to produce some evidence of qualification such as the B.Sc. in physics, and should undertake that he would not act except under medical guidance as to treatment

Prof. DIXON agreed with Dr. Heald. It was the function of the physician, he said, to diagnose and then to prescribe treatment, but in a number of cases the treatment required was of a very special kind

which the physician himself might not have the time, or perhaps the skill, to carry out. The physician did not make up prescriptions; they were made up by skilled people called chemists. If a medical man decided on ultra-violet light treatment he should put down on the prescription the light source, the area to be irradiated, the time, and so forth, and the administration of the treatment should be carried out by people trained in a particular way; that they should not be unskilled people was perfectly obvious.

SECTION OF DERMATOLOGY.

UNDER the presidency of Sir ROBERT BOLAM a discussion on

URTICARIA

was opened by Dr. R. HALLAM, who said that this complaint was both common and distressing. It served to impress on the dermatologist the fact that a change in the skin was often the expression of some pathological process in another part of the body, and that a knowledge of the latest advances in biology and physiology were necessary for its elucidation and treatment. Urticaria was not a disease but a symptom. Urticaria factitia or dermographism might or might not be accompanied by urticaria vulgaris but, curiously, did not irritate. Lewis had ascribed the wheals of both to the release of a histamine-like substance from the cells of the skin, though the cause of the exaggerated susceptibility of the patient with urticaria factitia was not clear. Its incidence was higher in epileptics and alcoholics, although it occurred in perfect health. Acute urticaria might follow some dietetic error and be accompanied by more or less severe constitutional symptoms. The chronic recurring form, however, was that which most exercised the skill and patience of the physician. True urticaria was not common in children, but papular urticaria, or lichen urticatus, was usually classified with it and was peculiar to childhood. A curious feature was that patients recovered directly they were admitted to hospital, even without treatment, and their rash recurred on discharge. Anaphylaxis did not always explain the reaction, and the term "sensitisation" had therefore to be used for the inexplicable predisposition to react to stimuli which had no effect on a normal individual. The antigen might be ingested, inhaled, or absorbed through the skin with identical results. The susceptibility apparently existed in the serum and was transmissible to offspring. When once sensitivity to one antigen was established, sensitiveness to others seemed to follow. The diversity of the causes of urticaria had long been recognised; Dr. Hallam thought that focal sepsis played a far greater rôle than food protein. Every case must be approached with the greatest circumspection and each system must be examined. Trauma might be an exciting cause. Should the offending antigen be detected, desensitisation might be attempted. Of empirical remedies, calcium salts were disappointing. If the exciting cause could not be discovered, thyroid extract was worth a trial.

Biochemical Investigation.

Dr. H. W. BARBER (London) discussed the biochemical investigations of Mr. G. H. Oriel and himself into allergy, which he characterised as the most important biological and medical problem that had ever existed. It represented the pathology of the reaction of man and the lower animals to their environment. It seemed clear that in the ichthyosis-asthma-hay-fever-eczema-prurigo-urticaria-migraine syndrome, in which there was almost invariably a strong family history, there must be some inborn metabolic kink predisposing the victim to become sensitised to various proteins. Dr. Oriel had discovered an "ether reaction" in the urine of certain cases of cardiac failure and also in urticarial subjects. The connexion between the two was probably some degree of hepatic insufficiency or some common factor concerned with the production of tissue œdema. The reaction was also positive in other allergic patients and in toxic jaundice; this supported the hepatic theory of its cause. The amino-acid content of the blood had therefore been estimated, and found to be high in untreated allergic patients, especially during attacks, but to return to normal when the condition remitted or was cured. Only a small number of estimations of urea, uric acid, and creatinine had been made, but these non-protein nitrogenous substances seemed also to be raised during the acute paroxysms. The rise in amino-acid might be partly accounted for by the presence of toxic amines of the histamine type, or might be merely an indication of the disturbance of endogenous protein metabolism. All allergic attacks were accompanied by almost complete suppression of chloride excretion, which became excessive immediately after recovery. The total blood chlorides were markedly diminished, whereas the serum chlorides might remain normal—i.e., there was a reduction in the corpuscle content of chloride. In simple urticaria the chloride reduction occurred during the attacks and was apt to return to normal in the intervals. Deposition of urates often occurred. This was not related to concentration or acidity but to the state of the urine colloids, and was always an indication (except after excessive sweating) of a temporary functional metabolic disturbance. To summarise the findings in the blood: just before and during the paroxysms there was a rise in amino-acid content, in uric acid, and creatinine, and a fall in total chloride—chiefly that of the corpuscles. In the urine there was a rise in free acidity; in ammonia excretion (the ratio of free acid to ammonia was altered); in specific gravity, owing to diminished water excretion; in excretion of amino-acid, creatinine, and uric acid. There was a retention of chlorides; urates often deposited on cooling; and ether reaction was strongly positive. After the subsidence of the paroxysm all these were reversed, diuresis occurred, and the urine often became alkaline.

Very large numbers of controls and of patients with all varieties of allergic disease had been tested and the results had been remarkably constant. It was probable that the increased ammonia excretion and the reaction of chlorides were protective mechanisms. These investigations suggested certain principles of treatment based on the idea that the central factor in allergy was hepatic insufficiency. These principles had proved successful clinically, and were of far wider application than at first appeared; it would enable us to prevent light sensitisation and the after-effects of treatment by deep X rays, arsenic, bismuth and gold, as well as the more strictly allergic conditions.

Discussion.

Dr. H. C. SEMON (London) asked why allergic phenomena did not occur more often in cases of undoubted hepatic insufficiency, and in what other diseases the investigations had been made. Certain cases of urticaria reacted very well to calcium injected intravenously; others to autohæmotherapy and protein shock, which was rather difficult to explain on Dr. Barber's hypothesis.

Dr. W. J. O'DONOVAN (London) pleaded for a more careful definition of "allergy" and of "hepatic insufficiency" than Dr. Barber had allowed. There were multitudinous ways of injuring the human system but few reactions, and he thought the way we reacted was Mendelian. There might be many causes for one disease which was a pattern reaction.

Dr. J. BEATTY (Cardiff) thought that liver insufficiency was too big a thing to have attributed to it one group of diseases alone. The liver was a microcosm of the body and would be disordered in any form of disease. Ephedrine might have an effect on intractable cases of urticaria, and atropine might be even better. Identical results would follow the prolonged administration of any kind of protoplasmic poison. It was a local skin weakness that determined the onset of urticaria rather than any other reaction to a protoplasmic poison released by hepatic inadequacy.

After several questions Dr. BARBER, in reply, pointed out that they had not claimed to have discovered the cause of urticaria, but had simply investigated the biochemistry of the allergic state. The causation was a much more complicated matter. Allergic symptoms were common in liver disease—prurigo and itching, for example. One of the functions of these allergic people was wrong, either from heredity or some other cause. Amino-acid estimations had been done in a very long list of other diseases. There was an initial acidosis in allergic states, and bicarbonate of soda might stop this. The calcium factor entered in relation to the vegetative nervous system; the irritability of the sympathetic largely depended on the calcium content. Protein therapy acted by desensitisation and preventing anaphylaxis. The liver was in some way responsible for anaphylactic shock, which could not be produced if the liver were cut out. He had used ephedrine and atropine, which undoubtedly acted through the parasympathetic system, on which the symptoms depended. Adrenalin acted on one phase only of the anaphylactic state. He thought it unjustifiable at present to speak of treatment.

Dr. HALLAM, in reply, expressed sympathy with speakers who had asked for guidance in treatment, but said there was no other way than to go systematically through the possible causes. He had been disappointed in autohæmotherapy. Cases varied very much and often got well by themselves; he agreed that many were due to a *B. coli* leak through pelvic adhesions.

THE STEAM CAUTERY IN DERMATOLOGY.

This, said Dr. SEMON, was a most valuable destructive agent, especially when associated with vigorous use of the sharp spoon. It was better than diathermy, because there was no fear of breakdown of the apparatus, which was portable, cheap, and independent of lighting circuits. The penetration of heat was very slow, about an inch a minute, and it was therefore possible to determine when normal tissue had been reached and save penetration of cartilage or mucous membrane. Open ether should be avoided because of the open flame, and local anæsthesia was the best. The only hitch he had encountered was blocking by chalk deposits from the water; either distilled water should be used or the pipes should be cleared periodically with a piece of wire. There was never any charring, and a constant heat was well maintained and bleeding easily controlled, provided the apparatus was cleaned from time to time of the altered blood that crusted on to it. A striking feature was the absence of consecutive pain. The steam cautery was indicated for any accessible epithelioma, especially where cartilage and mucous surfaces were involved and X rays and radium therefore futile. It was useful for lupus verrucosus if the horny layer were previously macerated with salicylic acid plasters for a few days. The tuberculous nodule was blackened by the cautery and stood out against the white scar tissue. Soft chancres and chancroids were very amenable, and the steam cautery would probably prove the method of choice for them. Granuloma pyogenicum and intractable papillomatous leukoplakia of the tongue had been cured (THE LANCET, Oct. 8th, 1927). The tissue to be destroyed must be soft and free from horn, so that warts and unmacerated verrucose tumours were excluded. The coagulability of the tissue was important, therefore moles and fibromata were not amenable, but anthrax pustule and Delhi sore probably would be. The wound must be kept dry until the slough separated; ambrine was good for the raw stage and red lotion or scarlet red might be applied if the granulation were poor. There had been very few complications.

Dr. J. E. M. WIGLEY (London) suggested that electrical heating of the water would be more convenient, and mentioned the danger of local treatment of carcinomata, with which infected glands were so often associated.

Dr. SEMON, in reply, pointed out the value of being independent of electrical circuits and agreed that only local growths should be treated locally. The steam cautery was better than the knife in that it closed channels rather than opening them.

THALLIUM DEPILATION FOR RINGWORM.

Dr. WIGLEY recorded the treatment of 50 out-patient cases of both sexes, aged between 18 months and 9 years. Depilation had been spontaneous only in 50 per cent., and growth had been much more rapid than after X rays. On checking the cures by Wood's glass inspection he had found that many macroscopically normal hairs showed fluorescence, and the microscope revealed infection along their length. Hairs infected with endothrix but with unbroken cuticle failed sometimes to fluoresce. X rays might fail but the failures were not deceptive, whereas those of thallium were. Moreover, it was impossible with out-patients to be certain of the vigorous local treatment essential during the depilation stage of thallium treatment. The older the child the more certain were the toxic symptoms. Physicians should be very chary of risking permanent damage to the growing organism for a treatment that was by no means a certain cure. There was great risk of reinfection of the growing hair, and he preferred X rays from every point of view.

Dr. BARBER agreed that thallium was very dangerous for older children though useful for young ones, who were unsuitable for X rays.

Dr. HALDIN DAVIS (London) doubted whether there remained any field for thallium; everyone agreed that it was dangerous to a child over 6, and younger children could be treated by X rays if given a 20-gr. dose of bromide the night before, the morning before, and half an hour before treatment. This was better for them than the "psychic trauma" of forcible restraint.

Dr. SEMON did not agree. The results of bad X ray treatment were appalling, and he had never heard of a fatal case of thallium poisoning. Toxic phenomena were probably due to keeping the hygroscopic acetate too long.

Dr. O'DONOVAN had abandoned thallium. The occasional catastrophes were no more reason for abolishing X rays than anæsthetic deaths were for abolishing chloroform.

Dr. HALLAM agreed with Dr. Semon, but thought both methods were bad. He had had 13 failures out of 42 out-patients treated with thallium, and seven had had severe toxic symptoms. Patients did much better if kept in bed throughout the treatment. The dosage ought always to be checked by a third person.

Dr. J. T. INGRAM (London) had had only three failures in 48 cases treated with thallium and would continue to use the drug for selected cases. Only one child had had toxic symptoms, and she had been over 8 years of age. It was important to have the patient under careful supervision during the period of depilation.

The CHAIRMAN agreed that neither method was satisfactory, but still kept an open mind for thallium.

ILL-EFFECTS OF SALVARSAN.

Dr. O'DONOVAN said that there were no clear and recognised ill-effects of salvarsan therapy; ill-effects might follow small doses of any brand and might appear at any time. Alarming lists of untoward symptoms had been recorded, including headache, shivering, vomiting, dyspnœa, palpitation, fainting, cramps, diarrhœa, cardiac distress, jaundice, urticaria, and many other dermal reactions, Reynaud's syndrome, uterine hæmorrhage, epileptiform seizures, epistaxis, and hæmaturia. Many cases were lost sight of through dissociation of clinics from general hospitals and practitioners. Dr. O'Donovan then gave details of a case of post-salvarsan melanodermia, another of maculo-melanodermia with follicular hyperkeratosis in a French polisher, and a third of multiple subcutaneous abscesses associated with arsenical exfolia-

tive dermatitis; over 40 "cold" abscesses had been opened and had yielded *Staphylococcus aureus*. Another patient had developed cutaneous and subcutaneous necroses, perforation of the nasal septum, and arsenical exfoliative dermatitis; his urine had contained *B. proteus*. Another man had had exfoliative dermatitis, had become very ill with fever and albuminuria, and his nasal septum had perforated. During convalescence he had had small boils and had then died of pulmonary embolism. Dr. O'Donovan felt it important that these uncommon ill-effects should be known, so that the practitioner learned not to use salvarsan unless there were facilities for transferring patients to hospital.

Dr. BARBER asked if Dr. O'Donovan had tried preliminary large doses of glucose and alkali in sensitive cases; he believed this would prevent many toxic effects.

Dr. HALLAM asked if sodium thiocyanate had been used for the dermatitis; he himself had not been quite satisfied with it.

The CHAIRMAN recalled extraordinary pigmentations after the dermatitis, and concluded that most of the dermatological troubles were due to too frequent doses of the drug.

Dr. O'DONOVAN, in reply, said he had no idea which patients were going to prove susceptible. It was not the poor, half-starved patients who proved sensitive. He had no confidence in sodium thiocyanate, though he continued to use it.

Corrigendum.—In the discussion on the Treatment of Diphtheria (THE LANCET, Sept. 8th, p. 517) Dr. E. W. Goodall is reported as having tried antitoxin in doses up to 200,000 units. The figure should have been 100,000 units.

Obituary.

CRESSY LIVINGSTON WILBUR, M.D. NEW YORK.

THE death of Dr. Wilbur from pneumonia on August 9th has removed America's pioneer vital statistician. He was in his sixty-fourth year, having been born at Hillsdale, Michigan, the son of Rodney Wilbur and Frances Cressy. He studied medicine at the University of Michigan, qualifying from the Bellevue Hospital Medical College of New York in 1890, and from 1893 to 1905 he was in charge of the Division of Vital Statistics of the Michigan State Department of Health. It was Wilbur who drafted a model vital statistics law and helped to secure its adoption by several of the American States; he was also responsible for the standard death certificate now in general use. From 1906 to 1914 Wilbur was Chief Statistician of the Division of Vital Statistics of the U.S. Bureau of Census and it fell to his lot to edit two international manuals of causes of death. In 1914 Dr. Hermann Biggs, then newly appointed to the position he made so famous, secured the services of Wilbur for New York State, but failing health compelled him to resign this post two years later. Dr. Wilbur leaves many indelible impressions of his foresight and energy in the statistical legislation of the United States.

NANCY MABEL HIELD, M.B., B.S. LOND.

Dr. Nancy Hield, who died at her home in Highgate on Sept. 6th, was born in 1899, the younger daughter of the late John Heaton Hield and of Harriet Hield. She entered the London (Royal Free Hospital) School of Medicine for Women in 1917, and qualified M.B., B.S. Lond., in the spring of 1923, having also in this time passed the Primary Fellowship Examination. She was among the prize winners of her year, obtained a resident post at the Elizabeth Garrett Anderson Hospital immediately after qualification, and became successively house surgeon and casualty officer at the Royal Free Hospital, and house surgeon at the Cancer Hospital. She was later appointed clinical assistant to surgical out-patients at the Hospital for Sick Children, Great Ormond-street, and medical officer to the North Islington Welfare Centre. In 1925 she became M.R.C.S. Eng., L.R.C.P. Lond. She took a keen interest in her profession and particularly in the surgical side of it. It was while acting as surgical registrar at the Royal Free Hospital during the summer of 1927, and working for the Fellowship of the Royal College of Surgeons, that she became aware that her health was definitely impaired, and it was decided that she should undergo an operation for the removal of a thoracic growth. Later a definite diagnosis of lymphadenoma was possible. It was a cause of great distress to her that she should be compelled to relinquish any of her work, and in spite of considerable difficulties she continued part of it up to within a few weeks of her untimely death. A friend writes:—

"Though Dr. Nancy Hield was devoted to her profession, and an indefatigable worker, she had a zest for enjoyment, and shared fully in the diversions of her friends, whether at the hospital or in the home circle. She enjoyed dancing and tennis, and pleasant outings and pretty things, and of private theatricals she had an extensive experience. She was endeared to her many friends by a lively sense of humour, never more happily exercised than in describing experiences in the hospital casualty department. Responsibility put on her naturally impulsive and affectionate nature a certain reserve; but below that reserve lurked an unfailing sympathy with misfortune and suffering, and the warmest attachment to her chosen friends, among whom must be numbered a cocker spaniel, 'Mr. Brown,' acquired just before her last illness declared itself. Nancy Hield had strong opinions, especially on professional matters, and expressed herself with directness and force on such questions as the desirability of co-education in the medical schools. She was not tolerant of insincerity or false sentiment and apt to be impatient of obstructions. Perhaps for this reason even her closest friends were surprised by the stoic fortitude with which she faced a situation she knew must end fatally for herself. The nature of her illness could not be a mystery to her, but she bore with quiet dignity, through long distressing months, not only physical suffering but the knowledge of untimely closure of a career which had been full of promise and interest. She never let her courage or composure fail. It was as if she had resolved that her profession, which had no reason to be ashamed of her career, should also have no reason to be less than proud of her at its close."

JOHN DAVIDSON, M.B. Lond., whose death occurred last month at his home in Uxbridge, was born in 1858. He received his medical education at King's College Hospital, where he qualified M.R.C.S. Eng. and L.S.A. in 1879 and took his M.B. Lond. with honours in 1881. He served the hospital as resident accoucheur and also as house surgeon to Lord Lister. In 1882 he became a junior partner in a firm of practitioners at Uxbridge and in due course was appointed medical officer to the Uxbridge Joint Isolation Hospital and to the Hillingdon and Uxbridge Cottage Hospital, a post he held for 36 years. Dr. Davidson worked in Uxbridge for over 40 years, and on his retirement in 1925 a presentation was made to him by his patients and friends. His professional activities did not exclude other interests. He was an amateur actor and elocutionist of some merit and played cricket and bowls with enthusiasm and skill. He was a well-known climber and a member of the Alpine Club.

DR. EDWARD JOHN PARRY, who died at his home in Dinas Powis on Sept. 3rd, aged 78, studied medicine in Edinburgh and qualified L.R.C.P., L.R.C.S. Edin. in 1879, becoming M.D. R.U.I. in 1881. On settling down to practice in his native country he

was appointed medical officer to the Garw Valley Collieries, and remained connected with these collieries until 1916, when he resigned on grounds of ill-health. Dr. Parry was keenly interested in the welfare of miners and in the educational facilities available for their children, and did his utmost to improve conditions of hygiene in the mines. He was a J.P. of Glamorgan for many years, and at the time of his death was one of the senior magistrates in the county. During the war he acted as chairman of the Medical Recruiting Board for Glamorgan. He was a member of the first county council elected for Glamorgan and served on several other public bodies in the county.

Dr. HENRY WILLIAM JACOB died at Malvern on August 31st after a long illness. He had practised in Malvern since 1895, and of recent years had devoted much time to municipal affairs as chairman of the urban district council. Born in Dublin in 1866, Dr. Jacob studied science and then medicine at Trinity College, Dublin, taking his M.A. with a gold medal in natural science in 1890. He qualified M.D., B.Ch. and B.A. in the same year, and became a medical resident at the Adelaide Hospital, Dublin, and later house surgeon to the General Hospital, Birmingham. He practised at Taunton for a few years, when he acted as honorary physician to the Taunton and Somerset Hospital, and then moved to Malvern, where he soon became interested in the movement for developing the town and extending its amenities. His policy on the urban district council was progressive and vigorous, and the improvement in housing conditions and the provision of a public park and swimming baths in Malvern are largely due to his influence.

DONATIONS AND BEQUESTS.—Mrs. R. M. Bradshaw, of Mold, Flint, left £1000 to Liverpool Royal Infirmary for the endowment of a bed in memory of her late husband, Dr. Thomas Robert Bradshaw, consulting physician to the infirmary.—Mrs. F. W. L. Giles, Netherhall-gardens, Hampstead, left, subject to the life interest of her son, the ultimate residue of her property, about £10,000, to be applied for the general purposes of the mental hospital known as Cheadle Royal, Cheadle, Cheshire.—Miss E. M. Clauson-Thue, of Bournemouth, left the bulk of an estate of over £85,000 to charitable institutions. Amongst the bequests were £1000 to the Victoria Hospital, Bournemouth, for an "Edith Clauson-Thue bed"; £1000 to the Miller Hospital, Greenwich, to endow a "William Clauson-Thue bed" in memory of her father; £500 each to the London Homœopathic Hospital, the Royal Blind Pension Society, and the London Association for the Blind; £250 each to the British Home for Incurables, Streatham, and the Infant Orphan Asylum, Wanstead. After the death of a legatee the Hospital for Children, Great Ormond-street, the London Orphan Asylum, Watford, the Hospital for Consumption, Brompton, and the Evelina Hospital, Southwark, will each receive £720.—Mrs. A. Archer, Bournemouth, left £300 to the Royal Victoria and West Hants Hospital.—Mr. David McCausland, Belfast, left the residue of his property to his wife for life and then £1000 each to the Victoria Hospital, Belfast, the Ulster Hospital for Women and Children, the Children's Hospital, Queen-street, Belfast, the Incorporated Cripples' Institute, and Dr. Barnardo's Homes.—Dr. Frederick Durham left £100 each to the Royal Medical Benevolent Fund, the Royal Hospital and Home for Incurables, Putney, and the Northampton General Hospital.—Mr. William Foley, Birmingham, left £1000 to a legatee for life and then to be divided between the Birmingham General Hospital and Queen's Hospital, Birmingham. The residue to his wife for life and on her death, after other bequests, one-fifth each to the Royal Cripples' Hospital, Birmingham, the Birmingham and Midland Eye Hospital, the Birmingham and Midland Hospital for Women, the Birmingham General Dispensary, and one-fifth between the Birmingham General Hospital and Queen's Hospital, Birmingham.—Mr. Henry Charles Summers, of Forest Hill, London, left £500 to the London Hospital and £3000 to such charitable institution or institutions (and in such proportions) in England as the executors may select.—Sir William Forrest, of Leeds, left £1000 each to the Leeds General Infirmary and the Bradford Infirmary, and £500 to the Bradford Eye and Ear Hospital.—Mr. W. J. Boothroyd, chairman of the Board of Management of the Southport Infirmary, is contributing £1000 towards the cost of the extension of the institution.

Correspondence.

"Audi alteram partem."

EPIDEMIC (LETHARGIC) ENCEPHALITIS.

To the Editor of THE LANCET.

SIR,—From your leading article of June 30th (p. 1333), and your annotation of Sept. 1st (p. 457) on the later manifestations of this disease, it is evident that if we trace the after-histories of a group of patients who have suffered from an acute illness recognised as lethargic encephalitis, the conclusions we must come to are gloomy enough. The position, however, is even more serious than these analyses would suggest. If the relative numbers coming under my own observation are approximately those occurring over the whole country, there are a large number of cases who present no such history of initial illness and are, it seems, liable to escape timely recognition. They labour under some such diagnosis as "nervousness," "neurasthenia," "muscular weakness," or even, as in one case which came under my notice, "a puir cratur." Many of them are such a burden on their relatives that it is not to be wondered at if domestic sympathy is often strained to breaking point.

As you rightly point out, there are several different organisations under whose care these unfortunates may come and it is to be feared that each one, having other sheep to tend, may hope to see the unprofitable ones fed by another flockmaster. It is not inapposite to call these sufferers sheep, because their bearing suggests nothing else so much as that of a dumb animal. Indeed, they seem bereft of those very characteristics which have established man's supremacy in the animal kingdom. They even have difficulty in maintaining the erect posture. Here is a disease capable of taking frightful toll of its victims in mental deficiency and even criminal lunacy. It is notifiable and it is an undoubted fact that notification creates the impression that the body responsible for the care of a patient is the public health authority. That this is so in the acute stage, when the disease assumes epidemic proportions, is clear, but the real problem, and the lasting problem, is the care of the chronic encephalitic. When he is a certifiable lunatic, with or without criminal tendencies, he is comparatively easily disposed of. It is in the stage preceding this that he is so difficult to deal with and to the majority of these patients, I believe, benefit would accrue from institutional treatment. There is no occasion to put them in the infectious diseases' hospital; the voluntary hospitals are full and overflowing with patients of every description and the parochial hospitals do not carry either the atmosphere or the personnel to treat satisfactorily so highly specialised a condition. What is wanted is a hospital devoted to it alone.

The available accommodation under public authority at present is deplorably inadequate, and the matter is one of some urgency. In the last few months I have noted an instance of a girl standing in risk of her life in the middle of a crowded thoroughfare completely "mazed" who, when asked what she was doing, replied, "Would you show me the way to the infirmary?" Another case was that of a young man found wandering on the railway. Both of these are chronic encephalitics and I have no doubt such occurrences could be duplicated all over the country. It can scarcely be anticipated that effective prevention against this disease will appear for many years, and I would like to see the establishment at suitable points of encephalitic settlements. Scarcely a week passes but that some country house, whose owner feels the burden of existing rates too heavy, comes into the estate market. The acquisition and utilisation of such houses, each accommodating, say, 50 patients, would not, I think, be an insuperable difficulty. At

present it is impossible to do anything to restore the broken faculties of the encephalitic and any measures designed to prevent the onset of complete mental decrepitude in these sufferers are worthy of sympathetic study.

I am, Sir, yours faithfully,

Dundee, Sept. 7th, 1928. J. M. STALKER.

*** The situation is to some extent met in London where the Metropolitan Asylums Board has for the past three years allotted 100 beds at the Northern Hospital, Winchmore Hill, for children 3–16 years of age suffering from the after-effects of epidemic encephalitis. These beds, it seems, are now not fully occupied.—ED. L.

THE LATER RESULTS OF PARTIAL GASTRECTOMY FOR GASTRIC AND DUODENAL ULCER.

To the Editor of THE LANCET.

SIR,—In Mr. Flint's letter (p. 478) it is stated that no less an authority than Sir Berkeley Moynihan "has never seen an anastomotic ulcer develop after primary gastrectomy" for gastric ulcer. I have had one such case under my care.

A woman, aged 42, was operated upon by myself on May 23rd, 1923, for a gastric ulcer high up on the lesser curvature by the antero-Polya method. She remained perfectly well for two years. In June, 1925, she commenced having pain after food on the left side of her abdomen radiating round to the back. During these attacks, which lasted about three weeks, she vomited and thus relieved the pain. She vomited blood on two occasions. The intermissions between the attacks varied from four to six weeks. After admission to hospital X ray examination showed nothing very definite, but the history was so suggestive that on June 29th, 1926, a few days after blood transfusion, I operated upon her again. I found definite thickening of the anterior surface of the anastomosis in its lower third near the greater curvature of the stomach and extending into the jejunum. No definite ulcer could be felt, there was no narrowing of the orifice, there was no ulcer in the stump of the stomach. I excised the thickened portion and to the naked eye it appeared a typical anastomotic ulcer. It was examined at once by the pathologist, who reported that he thought a fragment of foreign body was present (? thread). Microscopically there was granulation tissue with many giant cells, but no definite ulceration was found. I reconstructed the anastomosis and made an entero-anastomosis between the entering and returning limb of the jejunum.

I have heard from this woman to-day stating, "since my operation in 1926 my health is generally much improved. I have had no pain or indigestion since." This is the only case that has come under my notice in a considerable number of gastrectomy cases for chronic gastric ulcer. Thread was used in this case for stitching the sero-muscular coats.

I am, Sir, yours faithfully,

Sheffield, Sept. 5th, 1928. ERNEST FINCH.

BLEPHARITIS SUCCESSFULLY TREATED BY AN AUTOGENOUS ANTIVIRUS.

To the Editor of THE LANCET.

SIR,—A woman sent to me for bacteriological treatment by one of the surgeons of the Central London Ophthalmic Hospital had been troubled with blepharitis for a number of years. For some time past the disease had been getting worse, so that when I first saw her it had reached a stage when it was seriously interfering with the ordinary routine of her life. Staphylococci were the only bacteria demonstrated in material taken repeatedly from the inflamed areas. Treatment was carried out by four distinct bacteriological methods, only one of which proved efficacious. The first method used was the administration of subcutaneous inoculations of stock polyvalent staphylococcus vaccine. This vaccine, having failed to produce any improvement in the condition, an autogenous vaccine was made and administered without any more favourable result. It was then determined to try the effect of Besredka's antivirus therapy. A stock antivirus was employed and handed over to the patient with the instructions as to its application. Although this particular batch of antivirus had given promising results in similar cases on former occasions, it failed to ameliorate the condition. At this stage the patient became sceptical as to the value of any treatment, and it was difficult to persuade her to continued efforts. However, she consented to have an autogenous antivirus prepared and applied, and within 24 hours of its first application in the form of a lotion to the affected parts improvement in signs and symptoms became manifest. Persistent treatment has led to what appears to be a cure of the condition.

In view of the intractable nature of the disease in question the case appears worthy of notice. It affords a near approach to a crucial experiment. The element of suggestion can certainly be eliminated, since the patient's faith had been reduced to a minimum or even to a negative quantity by a series of failures. The results obtained in this case, coupled with experience in other less dramatic cases, suggest that treatment by autogenous antivirus preparations should be tried in certain forms of eye disease.

I am, Sir, yours faithfully,

W. E. M. ARMSTRONG, M.D.

Weymouth-street, W., August 28th, 1928.

PAPWORTH COLONY AND SANATORIUM TREATMENT.

To the Editor of THE LANCET.

SIR,—Certain newspapers appear to have given the impression that in my address at Dublin I attacked sanatoria, but I can assure Dr. Walters that this was not the case. What I did say, and indeed have been saying for years, is that in a great number of cases the benefits of sanatorium treatment alone cannot be more than temporary and that the village settlement is an after-care scheme which meets all the requirements of the consumptive worker. Papworth exists entirely because it was found impossible for patients to follow the advice of the profession after they had had sanatorium treatment and returned to their homes. Public opinion and economic necessity are the principal enemies of the discharged sanatorium patient. At Papworth neither enemy is present, and consequently we are able to see what happens when the advice of the medical profession can be followed. That the results have been so entirely satisfactory is a welcome indication that the profession has made no mistake in this matter. The only difficulty is to convince people that to maintain sanatoria without village settlement is to put into practice only half the advice of the profession, and therefore to achieve results which cannot help being grossly disappointing.

I am, Sir, yours faithfully,

P. C. VARRIER-JONES,
Medical Director, Papworth Village Settlement.

Sept. 6th, 1928.

INSOLATION IN PULMONARY TUBERCLE.

To the Editor of THE LANCET.

SIR,—May I recall the attention of my colleagues to a point in the treatment of phthisis which seems to me in process of being overlooked—namely, that direct sunshine is a source of danger to patients who have not been warned to keep out of it? Doctors who only occasionally see cases of pulmonary tubercle do not get the opportunity of noting the deplorable results which may follow one "sun bath," and this in a patient who before was doing well in every way. Certainly, medical students do not recognise the danger, for they use the phrase "plenty of sunlight" when prescribing treatment, and the same idea is conveyed in some of the smaller text-books of medicine. As a patient in two sanatoria I have

seen pyrexia, increased sputum, pleurisy, and hæmoptysis follow the first spell of fine summer weather, and I have observed in myself increased languor and malaise. Later on in summer, when the skin has become heavily pigmented, the risk of harm from the sun may be less, and for some reason harm is less likely to follow from walking in the sun than sitting in it; but the danger to many patients is always there, and those who have learned by experience prefer to sit in the shade.

I am, Sir, yours faithfully,

August 30th, 1928. M.R.C.S.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments are notified:—

Surg. Comdrs. E. B. Kelley to *Champion*; W. P. Vicary to *Erebus*; and M. J. Aitken to *Calliope*. Surg. Lieut.-Comdrs. S. R. Johnston to *Caradoc* (on recommg.); S. G. Rainsford to *Centurion*; R. W. Nesbitt to *Victory*, for R.N. Hospital, Haslar, temp., and as medical Specialist; F. L. H. McDowel, T. N. D'Arcy, A. G. Bee, C. H. Savory, and G. G. Newman to *President*, for course of instruction; and T. Madill to *Victory*, for Royal Marine Infirmary, Portsmouth. Surg. Lieuts. E. V. Barnes to *Erebus*; A. A. Pomfret to *St. Vincent*; R. W. Mussen to *Danae*; E. J. K. Weeks to *Victory*, for R.N. Barracks, Portsmouth; H. W. Strong to *Fisgard*; W. J. Doody to *Calliope* and to *Cleopatra*; W. A. Hopkins to *Pembroke*, for R.N. Hospital, Chatham; D. M. Beaton to *Sutton*; P. H. Deeny to *Endeavour*, and on recommg.; D. R. Campbell to *Suffolk*; O. Watson to *Iroquois*; A. P. Anderson-Stuart to *Benbow*; and L. P. Sayers to *Godetia*.

Entries: M. A. Graham-Yooll has been entered as Surgn. Lieut., R.N., for Short Service, and apptd. to *Victory*, for R.N. Hospital, Haslar, for course of instruction, and R. E. G. Richmond has been entered as Surgn. Lieut., R.N., for Short Service, and apptd. to *Victory*, for R.N. Hospital, Haslar, for course of instruction.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Comdr. A. E. W. Hird, V.D., to *Victory*, for R.N. Hospital, Haslar, for training.

Proby. Surgn. Sub-Lieuts. R. M. B. Lewis and D. M. Craig to *Victory* for R.N. Hospital, Haslar, for training.

Surg. Lieut. H. G. Ungley, to *Victory*, for R.N. Hospital, Haslar, for training, and R. Russell to *Victory*, for R.N. Hospital, Haslar, for training, and to *Tiger*, to complete training.

ROYAL ARMY MEDICAL CORPS.

Maj. (Bt. Lt.-Col.) (temp. Col.) G. de la Cour, O.B.E., to be Lt.-Col., and to be supern. in that rank whilst holding the appt. of Consulting Surg. to the British Army.

Capt. A. H. Clarke, M.C., to be Maj. (Prov.).

The undermentioned to be temp. Lts.: G. F. Maher, A. R. Cowan.

General List: C. H. Wilson (late Surg. Sub-Lt., R.N.V.R.), to be Lt.

MILITIA.

Capt. L. A. B. Moore to be Maj.

ROYAL AIR FORCE.

The undermentioned Flying Officers are promoted to the rank of Flight Lt.: C. W. Coffey, J. Hutchieson.

Flight Lt. E. J. Mockler is granted a permanent commission in this rank.

INDIAN MEDICAL SERVICE.

Lt.-Col. S. H. Middleton-West, M.C., retires.

COLONIAL MEDICAL SERVICES.

H. R. Dive, Medical Officer, Federated Malay States, has been promoted to be Senior Medical Officer, Pahang.

The following appointments are notified: N. Chilton, Medical Officer, Tanganyika Territory; R. F. Pinson, W. Hunter, C. E. G. Nunns, Medical Officers, West African Medical Staff; F. J. Farr, Radiologist, Electrologist, Medical Dept., Hong-Kong; A. J. McKinlay, Assist. Medical Supt., Lunatic Asylum, Barbados; A. W. Carleton, Colonial Surgeon, St. Helena.

ST. MARY'S HOSPITAL (PADDINGTON) RUBBISH COLLECTION FUND.—This fund, which was started on July 1st, 1927, had by the end of the year produced £380. The annual report asks the public to notify the hospital when old clothes, linen, &c., are available for collection.

Medical News.

UNIVERSITY OF LONDON.—The Connaught Hall of Residence at 14, Bedford-place, London, W.C. 1, recently presented to the University of London by the Duke of Connaught, will be ready for students of any of the colleges and schools of the University at the opening of the session in October. Mr. W. S. Angus has been appointed warden and Miss Burnett matron.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At a meeting on Sept. 3rd, Sir Arthur Keith, F.R.S., was admitted to the Honorary Fellowship, and Dr. Samuel McMahon to the Fellowship, after examination.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.—The anniversary dinner will be held at the Hotel Victoria, Northumberland-avenue, at 7 P.M., on Wednesday, Oct. 3rd.

ROYAL DENTAL HOSPITAL OF LONDON.—The dinner of the past and present students will be held at theTrocadero Restaurant (Empire Rooms) on Oct. 20th, at 7 P.M. Mr. G. G. Campion will preside.

CHARING CROSS HOSPITAL MEDICAL SCHOOL.—Prizes will be distributed in the Out-patients' Hall of the hospital by Dr. T. Watts Eden on Thursday, Oct. 4th, at 3.30 P.M., to be followed by a reception at the school.

MIDDLESEX HOSPITAL MEDICAL SCHOOL.—The winter session will open on Tuesday, Oct. 2nd, when the introductory address will be delivered at 3 P.M. in the Queen's Hall by Mr. A. E. Webb-Johnson. Prizes will be distributed by Prince Arthur of Connaught, and Princess Arthur will present the Fardon Memorial Medals. The annual dinner will be held the same evening at 7.30 P.M., at the Savoy Hotel, when the chair will be taken by Prince Arthur.

THE first number of a new monthly journal, intended to keep members of the medical profession in touch with the latest developments in artificial sunlight therapy, medical radiology, and electrology, will be published on Oct. 1st, under the title, *The Actinic Practitioner and Electrotherapist*. Price 6*d*. Publishing offices at 139, High Holborn, London, W.C. 1.

MINERS' HOSPITAL, CAERPHILLY.—Extensions estimated to cost £40,000 are now being made to the Miners' Hospital, Caerphilly, South Wales. Accommodation for 50 new beds will be available when they are completed.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—Four post-graduate courses are due to begin on Sept. 17th, each of them lasting for two weeks. Medicine, surgery, and the specialties will be dealt with at the Westminster Hospital, the whole of each day being occupied with lectures, demonstrations, and operations. The course in orthopædics to be held at the Royal National Orthopædic Hospital will also occupy the whole of each day, and that on diseases of children at the Queen's Hospital for Children, Bethnal Green. The course on diseases of the eye at the Royal Eye Hospital, St. George's-circus, London, S.E. 1, will be held each afternoon at 3 P.M.

A CANADIAN MEDICAL TOUR.—The members of the Canadian Tuberculosis Association, who are on a tour of European institutions, visited King Edward VII. Sanatorium on Sept. 7th, and were entertained to lunch, followed by a lantern demonstration by Sir StClair Thomson, who related his 17 years' experience as laryngologist to the institution. Dr. F. H. Pratten (London, Ontario), in proposing a vote of thanks, mentioned that the lead given by Midhurst had been followed practically throughout Canada, and that every sanatorium in Canada now had a laryngologist on the staff, the larynx in every case being systematically examined.

PIGMENTATION OF SKIN AND TUBERCULOSIS.—On Sept. 5th, at the Annual Congress of the National Veterinary Medical Association held at Newcastle-on-Tyne, the relative immunity from tuberculosis of the dark-skinned Jewish races compared with the blondes of Northern Europe was discussed. Mr. W. C. Miller, of Edinburgh, said that there was authority for the statement that certain races of cattle possessed of a light-coloured coat and hide contracted tuberculosis more easily than those with dark coats when they were put together in infected places. This contention was in accord with the statement of other authorities who had been compiling statistics of tuberculosis in the human race. The blonde individual with auburn, silky hair, and pale, freckled skin of fine texture, showed a greater degree of susceptibility to infection with tuberculosis than those of the Jewish race,

BRADFORD MENTAL HOSPITAL.—A new mental hospital is to be erected at Bradford at a cost of £132,000, to house 400 patients.

GLASGOW REFRACTION HOSPITAL.—A refraction hospital, under the control of a committee of qualified opticians, is about to be opened in Glasgow. The principal object of the institution will be the provision of free sight-testing facilities, and the supply of glasses in necessitous cases, while classes will be conducted in connexion with the diplomas of the British Optical Association and the Spectacle Makers' Company. Patients found to be suffering from disease of the eye will be advised where to obtain professional treatment.

Appointments.

ANDERSON, J. S., has been appointed by the City Council of Leeds, as Medical Superintendent of Seacroft Hospitals.

BEBBINGTON, Evelyn F., M.B., Ch.B. Liverp., D.P.H., Assistant Medical Officer for Maternity and Infant Welfare at Northampton.

HANCOCK, A. C., M.B. Lond., M.R.C.S. Eng., L.R.C.P. Lond., D.P.H., Medical Superintendent at Kent County Mental Hospital, Barming Heath, Maidstone.

HENDERSON, A., M.B., Ch.B. St. And., Assistant Medical Officer of Health for the county of Aberdeenshire.

Sheffield Royal Hospital: ALLOTT, E. N., M.B., Ch.B., B.Sc., full-time Assistant Physiologist; CALLCUTT, J. SHIRLEY, M.B., Ch.B., Resident Surgical Officer; BEATTIE, WM., M.B., Ch.B., Senior Casualty Officer; MAXWELL, C. G., M.B., B.Ch., B.A.O., First Assistant Casualty Officer; PATTERSON, W. J., M.B., B.Ch., B.A.O., Second Assistant Casualty Officer; RAINSFORD, C., M.B., B.Ch., B.A.O., First House Physician; FLINT, A. O., M.B., Ch.B., Second House Physician; HYNES, W., M.B., Ch.B., M.R.C.S., L.R.C.P., First House Surgeon; LYNN, ALAN, M.B., B.Ch., B.A.O., Second House Surgeon; ALCOCK, WM., M.B., Ch.B., Ophthalmic House Surgeon; and MARWOOD, V., M.B., Ch.B., Aural House Surgeon.

Vacancies.

For further information refer to the advertisement columns.

All Saint's Hospital (For Genito-Urinary Diseases), 49–55, Vauxhall Bridge-road, S.W.—H.S. At rate of £150.

Bath, Somerset and Wilts Central Children's Orthopædic Hospital, Combe Park.—Asst. Res. M.O. At rate of £120.

Birmingham and Midland Eye Hospital, Church-street.—H.S. £110.

Birmingham City.—Asst. M.O. £750.

Birmingham General Hospital.—Asst. S. £50.

Birmingham, Highbury Hospital.—Jun. M.O. £300.

Birmingham, Queen's Hospital Medical School.—Res. Anæsthetist. £70–£100.

Brighton, New Sussex Hospital, Windlesham-road.—H.S. £50.

Bristol, Southmead Hospital.—2nd Asst. M.O. £200.

Bury St. Edmunds, West Suffolk General Hospital.—Res. H.S. £180.

Cairo, Egyptian University Faculty of Medicine, Dental School.—Lecturer in Dental Prosthesis, &c. £E480.

Cambridge, Addenbrooke's Hospital.—H.S. At rate of £130.

Chester, East Lancashire Tuberculosis Colony, Barrowmore Hall, Gt. Barrow.—Assist. M.O. £250.

Connaught Hospital, Orford-road, Walthamstow, E.—Sen. Res. H.S. At rate of £150. Also Jun. Res. H.S. and Res. H.P. Each at rate of £100.

Croydon, Mayday-road Hospital.—Res. Asst. M.O. £300.

Cyprus.—District M.O. £600.

Denbigh (near), North Wales Sanatorium.—Male Asst. Res. M.O. At rate of £200.

Derby, Derbyshire County Council.—Tuberculosis Officer. £750.

Evelina Hospital for Children, Southwark, S.E.—H.P. At rate of £120. Also Hon. Asst. Aural Surg.

Gloucestershire County Council.—M.O. for Maternity and Child Welfare. £750.

Gloucester, Gloucestershire Royal Infirmary, &c.—H.P. At rate of £150.

Hospital for Sick Children, Great Ormond-street, W.C.—H.S. Also H.P. Each at rate of £100. Also Part-Time Jun. Cas. O. At rate of £150.

Jersey General Hospital and Poor-law Infirmary.—Res. M.O. £200.

Leamington Spa, Warneford, Leamington and S. Warwickshire General Hospital.—Hon. Asst. S.

Leeds, St. James' Hospital.—H.P. and S. £200.

Liverpool, Liverpool Eye and Ear Infirmary.—Hon. Asst. Surgeon to Ear, Nose and Throat Department.

Liverpool Sanatorium, Delamere Forest, Frodsham.—Asst. to Med. Supt. £250.

London Lock Hosp., 91, Dean-st., W.—H.S. At rate of £200.

London Temperance Hospital, Hampstead-road, N.W.—Res M.O. At rate of £175. Cas. O. At rate of £120. Also H.P. At rate of £100.

Macclesfield, Parkside Mental Hospital.—Res. Clin. Asst. £75.

Manchester, Maternity and Child Welfare Centres.—M.O. £600.

Manchester, Monsall Hospital.—1st Asst. M.O. £600.

Manchester, Royal Infirmary.—Res. M.O. £200. Also Asst. M.O. and Asst. S.O. Each £35. Also Asst. Surg. O. for Central Branch £75.

Mildmay Mission Hospital, Austin-street, Bethnal Green, E.—Sen. Res. M.O. Also Asst. Cas. O. At rate of £140 and £100 respectively.

Miller General Hospital for South-east London, Greenwich-road, S.E.—Pathologist. £600.

National Hospital, Queen-square, W.C.—Asst. P.

Newcastle-upon-Tyne, University of Durham, College of Medicine. Asst. Bacteriologist. £500–£600.

Nottingham, Bagthorpe Institution and Infirmary.—Res. Asst. M.O. At rate of £300.

Plymouth Homœopathic and General Hospital.—H.S. At rate of £150.

Plymouth, South Devon and East Cornwall Hospital.—Cas. H.S. At rate of £100.

Prince of Wales's General Hospital, Tottenham, N.—H.S., Special H.S., and H.P. Each at rate of £120. Also Jun. H.S. and Jun. H.P. Each at rate of £90.

Queen's Hospital for Children, Hackney-road, E.—H.P. Also Cas. O. Each at rate of £100. Also Physician-in-Charge Skin Department.

Richmond, Surrey, Royal Hospital.—Sen. H.S. At rate of £150.

Royal Free Hospital, Gray's Inn-road, W.C.—Cas. O. £150.

Royal Northern Hospital, Holloway, N.—Res. M.O. £200.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Cas. O. £150.

Samaritan Free Hospital for Women, Marylebone-road, N.W.—Hon. S. to Out-patients.

Smethwick, Cornwall Works Dispensary.—M.O. £600.

South London Hospital for Women, South Side, Clapham Common S.W.—H.P. and 3 H.S.'s. Each at rate of £50.

Sudan Government Medical Department.—M.O. £E720.

Swansea Hospital.—Two H.S.'s. £150.

Swansea General and Eye Hospital.—Two Hon. Asst. S.'s.

Talgarth, near Brecon, South Wales Sanatorium, &c.—Asst. Res. M.O. £200.

West Bromwich and District General Hospital.—Cas. H.S. £200.

Weston-super-Mare Hospital.—Res. M.O. £130.

Willesden General Hospital, Harlesden, N.W.—Res. H.S. At rate of £100.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Dunstable (Bedfordshire) and Brighouse (York, West Riding).

The Home Secretary gives notice that in consequence of the death of Dr. J. E. Moorhouse, one of the Medical Referees under the Workmen's Compensation Act for the Stirling District of the Sheriffdom of Stirling, Dumbarton and Clackmannan, the appointment held by him is vacant. Applications for the post should be addressed to the Private Secretary, Scottish Office, Whitehall, London, S.W.1, and should reach him not later than Sept. 29th, 1928

Births, Marriages, and Deaths.

BIRTHS.

BRETT.—On August 31st, the wife of Major Pierce Brett, M.B., R.A.M.C., Reserve of Officers, Churchfields, Salisbury, of a son.

CANE.—On Sept. 7th, at Reepham, the wife of Maurice H. Cane, M.R.C.S., of a daughter.

FENTON.—On Sept. 7th, the wife of W. J. C. Fenton, M.R.C.S., Mavors-lane, Barking, of a son.

HERMAN.—On Sept. 6th, at Tonbridge, the wife of A. E. Herman, F.R.C.S., of a daughter.

HAYCRAFT.—On August 30th, at Cathedral-road, Cardiff, the wife of John Berry Haycraft, F.R.C.S. Eng., of a daughter.

MORLEY.—On August 28th, the wife of A. H. Morley, M.B., B.S. Lond., of a daughter.

WISHART.—On July 27th, at Toronto, Canada, the wife of D. E. Staunton Wishart, M.D., of a son.

MARRIAGES.

COCHRANE—ASPLIN.—On Sept. 6th, at the Church of the Holy Cross, Milton, Northants, Thomas S. Cochrane, M.B., to Gwendolen May, daughter of Mr. and Mrs. Asplin, the Manor House, Milton.

DICKSON—SOUTER.—On Sept. 5th, at King's College Chapel, Aberdeen, Alfred Thomson Barclay Dickson, M.B., Ch.B., to Isabel Elsie, eldest daughter of Prof. Alexander Souter, F.B.A., and Mrs. Souter, Humanity Manse, Aberdeen.

DEATHS.

FINDLAY.—On Sept. 5th, suddenly, Andrew Findlay, M.B., C.M., of Nelson, Lancashire, aged 59 years.

HIELD.—On Sept. 6th, at Millfield-lane, Highgate of lymphadenoma, Nancy Hield, M.B., B.S., younger daughter of the late John Heaton Hield and Harriet Hield, aged 29.

MCCALL.—On August 9th, at Fort William, Calcutta, Major Graeme William Denroche McCall, M.C., L.R.C.P., R.A.M.C., aged 38.

NASH.—On Sept. 9th, at Queen Alexandra Military Hospital, Millbank, Colonel Llewellyn Thomas Manly Nash, L.R.C.P., late A.M.S., Richmond, Surrey, aged 67.

PARRY.—On Sept. 3rd, at Dinas Powis, Cardiff, Edward John Parry, M.D., J.P., aged 78.

WILSON.—On Sept. 9th, at Fairwarp, Sussex, Albert Wilson, M.D. Edin.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

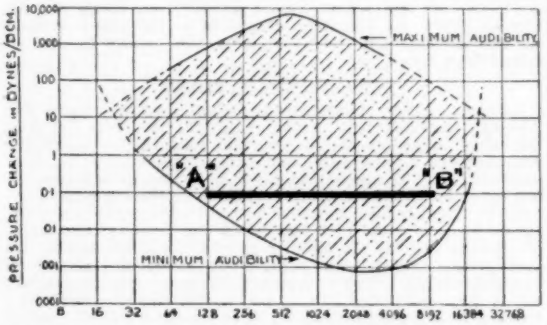
A GRAMOPHONE FOR THE DEAF.

By C. M. R. Balbi, A.M.I.E.E.

PEOPLE who are not totally deaf but only "hard of hearing" are much isolated from their fellow beings because they are unable to hear general conversation. They suffer from an additional hardship if they also cannot hear instrumental or vocal music, since music can give especial pleasure to men whose life is spent for the most part in a world of silence.

To meet the needs of those who are thus afflicted I have designed a gramophone which will produce a greater intensity

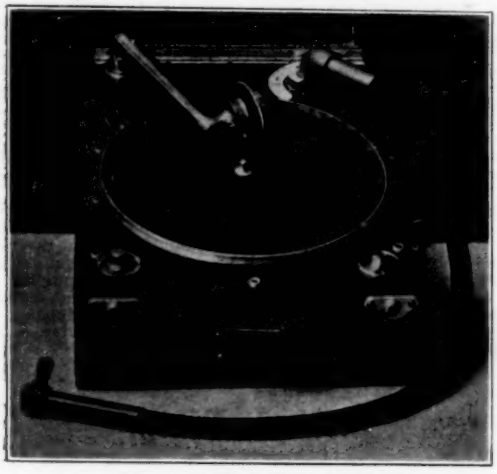
FIG. 1.



Standard of sound intensity of a gramophone as represented by "A.B."

than the ordinary instrument. The standard of sound intensity of an ordinary gramophone heard in a room is that of a piano or other musical instrument about equal. When this is expressed in the units of audiometric measurements * the standard may be said to vary about a mean

FIG. 4.

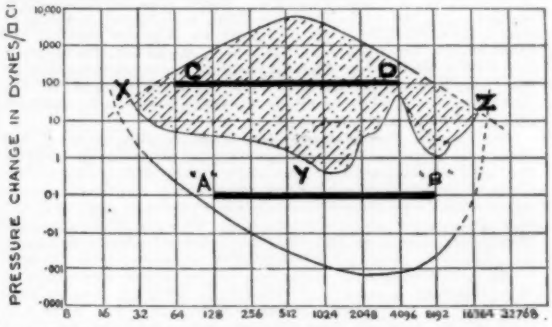


Gramophone for the deaf.

of 0·1 dynes per sq. cm. (root-mean-square pressure) as represented by AB in the audiogram shown in Fig. 1.

If we take an imaginary audiogram of a deaf person XYZ as shown in Fig. 2, then the level of the intensity AB would not be sufficient to make him hear. The intensity would have to be raised to the level CD—i.e., 100 dynes per sq. cm.—to make him hear, and means must be found to

FIG. 2.



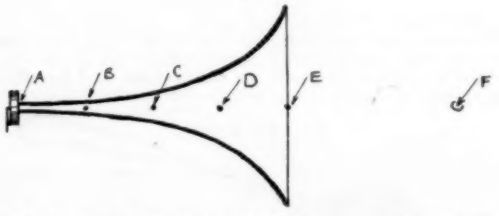
Standard of sound intensity required by a deaf person as represented by "CD."

accomplish this. By examining the average intensity of sound at different points along the acoustic passages of a gramophone, such as are indicated in Fig. 3, it is found that the average intensities are as follows:—

Point A (sound-box)	.. ..	= 1100	dynes per sq. cm.
„ B		= 1000	„ „
„ C		= 100	„ „
„ D		= 40	„ „
„ E (end of horn) ..	..	= 10	„ „
„ F (6 ft. from end of horn)		= 0·1	„ „

The intensity at the point B in the horn would thus be more than sufficient to enable the deaf person represented

FIG. 3.



Points in acoustic passages at which measurements were taken

by the audiogram XYZ to hear. It is an easy matter to tap the reproduced sound of the gramophone at this point and to conduct it to the ear of the sufferer by means of a flexible tube similar to that of a conversation tube.

This has been done, and in the special gramophone for the deaf which I have designed (Fig. 4) a further refinement has been added in the form of an adjustable volume control so that the deaf may regulate for themselves the intensity that suits them best. By listening at the special outlet provided the deaf are able to hear any recorded item or piece of music.

I have also designed on these principles a loud speaker which enables the deaf to obtain broadcast reception with the necessary apparatus.

* See THE LANCET, 1925, i., 954.

"SOME CAUSES OF RACIAL DECAY."

IN his Galton lecture delivered before the Eugenics Society on Feb. 16th last Mr. C. J. Bond inquired into the distribution of natural capacity in the population and the need for a national stocktaking. His interesting thesis was examined in a leading article which appeared in THE LANCET of Feb. 25th (page 401). The lecture has now been reprinted by the People's League of Health in the form of an attractive pamphlet which can be obtained from the secretary of the League at 12, Stratford-place, London, W. 1, for 6d.

STUDENT'S GUIDE: SESSION 1928–29.

ADDENDA.

African Medical Officers.—In addition to the membership of the West African Medical Staff, which is limited to British subjects of European parentage, there are a number of Government appointments for African medical officers in the West African Colonies. These appointments carry a salary on the scale £500–20–£600, and there is a higher scale, £600–30–£720. In addition, in Nigeria and on the Gold Coast, arrangements have been made for the employment of a few young African medical men temporarily on the hospital staffs, with a view to appointment to the Government service later, if suitable. In such cases a salary of £400 a year is paid.

Diploma in Bacteriology.—Dr. H. S. Raper, Dean of the Manchester Medical School, calls attention to the fact that a diploma in bacteriology has been granted by Manchester University for several years, with some candidates each year. While no mention was made of this on page 420, the fact was noted under the heading Victoria University of Manchester, on page 381, that a diploma in bacteriology is awarded by examination to registered medical practitioners.

Ancoats Hospital, Manchester.—No mention was made of this hospital among the hospitals offering educational facilities to Manchester medical students. The honorary staff of the Ancoats Hospital give both undergraduate and post-graduate clinical instruction and a fair number of students attend the out-patient clinics. The hospital contains 114 beds and deals with 20,000 accidents and urgency cases per annum. There are six resident posts open to men and women. The General Superintendent and Secretary is Mr. Herbert J. Dafforne.

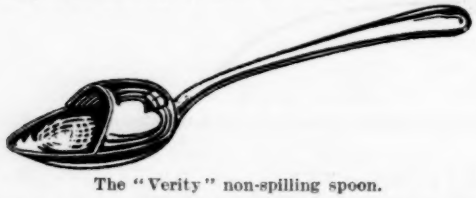
Since our Students' Guide was published a special number of the *Medical Officer* (Sept. 1st.) has appeared, containing full information as to degrees and diplomas in Public Health, along with an address on the Public Health Service as a career, by Dr. J. Howard Jones, President-elect of the Society of Medical Officers of Health.

The September issue of the *Edinburgh Medical Journal* is also a special educational number containing a concise guide (28 pages) to medical education in Scotland.

The *British Dental Journal* for Sept. 1st contains an address on Dentistry in its Relation to the Public Health Service, by Dr. W. M. Frazer and a supplement of 16 pages, giving the dental regulations adopted by the examining bodies and a useful idea of the cost of the dental curriculum in various centres.

A USEFUL SPOON.

THE "Verity" non-spilling spoon, of which we give an illustration, has been designed for administering medicine and other liquids to infants and invalids. In the ordinary horizontal position it holds one teaspoonful, and by tilting the spoon, or placing it upon the table after filling, the



The "Verity" non-spilling spoon.

liquid runs into an enclosed part, from which it cannot be easily spilled. The inventor rightly believes that when an ordinary spoon is used for giving medicine to children a part of the dose is generally lost in transit, and sometimes too large a dose may be given because an inaccurate attempt has been made to compensate for this loss. Use of the "Verity" spoon should make for precision and should, incidentally, prevent sticky fluid from being spilt over clothing. It is obtainable at the price of 3s. post free from the sole distributors, Discon, Ltd., (Dept. S), 12, Henrietta-street, London, W.C. 2.

INDUSTRIAL METHYLATED SPIRIT AS A BEVERAGE.

IN the current number of the *Analyst* Mr. D. Henville, the Stepney public analyst, recalls the complaint of a number of persons charged with drunkenness at the Old-street Police Court last year that their symptoms were produced by the nature rather than the amount of the liquor imbibed. Neither methyl nor isopropyl alcohol, however, was found in the class of wine complained of and the abnormal symptoms remained unexplained. Early this year, however, it was noted that industrial methylated spirit was being sold in the district as a beverage, and the discovery confirms the repeatedly observed ill-effects of methyl alcohol whenever it is taken into the human system. Some time ago attention was called [1] to some work done in the United States, in which it was sought to show that methyl alcohol was a relatively harmless substance. Mr. Henville describes a technique for the detection of isopropyl alcohol, based on its oxidation to acetone and the identification of the latter by means of the nitro-prusside reaction, by which as little as 0·1 per cent. can be detected in a liquid containing 10 per cent. of ethyl alcohol.

A PAMPHLET ON DISEASE IN CHINA.

ANY medical man on his way to take up work in China, especially if for the first time, would do well (if he can read German) to study on the voyage a pamphlet on "The Epidemiology and Tropical Diseases of China" (pp. 69, with 13 of bibliography added, price about 5s.) by Dr. E. G. Nauck, being the latest supplement to the *Archiv für Schiffs- und Tropen-Hygiene.* Dr. Nauck, formerly of the Hamburg Institute and recently on the staff of the Union Medical College, Pekin, discusses the history, pathology, industrial origin, and treatment of most of the important diseases of China. Like most German authorities, he generously honours the memory of Manson, who showed how the problems of tropical medicine were to be solved. He notes that much of our knowledge is due to missionaries and that antimosquito regulations were made in Hong-Kong so long ago as 1900. By directing attention to the many lacunæ in our information, he stimulates the reader to aim at completing them.

NEW PREPARATIONS.

Calsoma.—This preparation, which comes from the Abbott Laboratories, North Chicago, consists of the tribasic phosphates of calcium and magnesium, combined with sodium biphosphate, and magnesium citrate in effervescent form. The intention has been to provide a neutralising agent for excessive acidity without producing alkalinity, and the drug has been found to be a valuable gastric antacid. In our issue of June 16th last, when our present knowledge of alkaline salts as therapeutic agents in gastric disease was briefly summarised, it was pointed out that careful laboratory experiments by Messrs. Freezer, Gibson, and Matthews, which were published in Guy's Hospital Reports, indicated tribasic magnesium phosphate to be the most suitable agent for the rapid counter-action of gastric acidity. At the same time, experimenters made the suggestion that tribasic calcium phosphate, citrates, and calcium carbonate are almost equally effective. The manufacturers of calsoma, it would appear, have produced a preparation very closely following these suggestions. The effervescent powder is granular, is put up in two-ounce bottles, and for a single dose two teaspoonfuls are added to a glass of cold water and is taken after meals at the period which personal experience shows to synchronise with the onset of heartburn. For children under 10 years of age one teaspoonful is indicated. There is clinical evidence that in gastric ulcer the drug may be safely used over long periods.

Trinitrine Caféinée (Dubois).—This preparation has been sent to us by the Anglo-French Drug Co., 238A, Gray's Inn-road, London, W.C. In its new pharmaceutical form the drug is supplied in sugar-coated, soft-centred pills from which, when placed in the mouth and chewed the nitroglycerine is immediately liberated and absorbed, prompt action resulting. Each pill contains in addition to 3 cg. of trinitrin (1 per cent. sol.) 2 cg. of pure caffein, which is found to prolong the action of the trinitrin, while intended to counteract the weakness following on anginal attacks. The directions warn the consumer that the maximum dose in the 24 hours should be ten pills.

Hepatex is a concentrated extract of liver produced in the laboratories of Messrs. Evans Sons, Lescher and Webb, at Froston Lodge, Runcorn, in accordance with a method evolved by their own research workers. The liquid is so concentrated that 1 oz. contains the active principles of 16 oz. of fresh liver, and it can be taken undiluted in teaspoonful doses or in soup and similar vehicles. Hepatex is supplied in four-ounce bottles, which is sufficient for eight days' full treatment.

Medical Diary.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.
TUESDAY, Sept. 18th.—3.15 P.M., Dr. R. Wade: Anæsthesia.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.1:
MONDAY, Sept. 17th.—1.30 P.M.: Examination of the Ear.
WEDNESDAY, Sept. 19th.—1.30 P.M.: Examination of the Nose.

[1] THE LANCET, 1928, i., 1236.